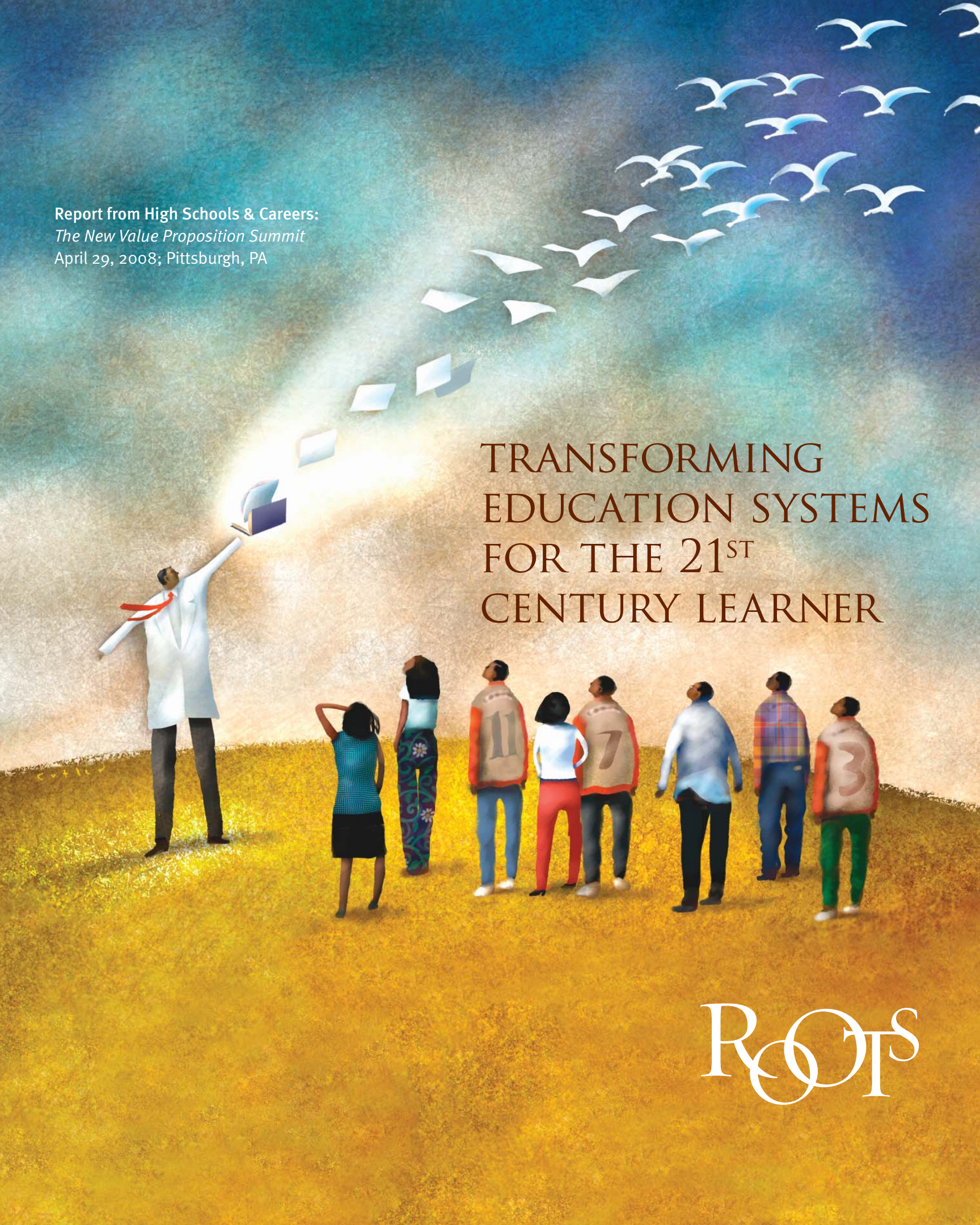


Report from High Schools & Careers:  
*The New Value Proposition Summit*  
April 29, 2008; Pittsburgh, PA



# TRANSFORMING EDUCATION SYSTEMS FOR THE 21<sup>ST</sup> CENTURY LEARNER

ROOTS



# PREFACE

The U.S. education system fails to graduate or adequately prepare a significant proportion of its students, thus failing to meet student needs and the human capital needs of our economy. Solving such a serious problem requires the participation of multiple sectors – education, human services and business – to address both low expectations and performance. In addition, the nation must build on its strengths – schools that meet their students’ needs and work with regional employers, post-secondary training providers and community-based organizations – to bring about improvements in student academic and career aptitude.

To explore this territory, the Jewish Healthcare Foundation (JHF) assembled more than 100 national thought leaders from the business, education and human services sectors for a rare opportunity to share collective experiences and wisdom, and develop a common platform for reform. High School & Careers: The New Value Proposition Summit was held April 29, 2008 and focused on high schools and career connectivity. Its goal was to produce actionable recommendations on how to make career ambition and career knowledge a core part of the high school experience and an essential component of high school reform.

This edition of *ROP* presents the current condition of the U.S. education system, recommended improvements based on Summit results, and schools that have successfully implemented such improvements. We hope this publication becomes a reference for your current work and an inspiration toward your future initiatives that transform education systems to respond to the needs of the 21<sup>st</sup> century learner.

For our part, the Jewish Healthcare Foundation launched the Center for Career Learning (CCL) to advance, among employers, schools and community organizations, strategic collaborations that build career awareness and enhance student preparation for work in the regional healthcare industry. Through CCL, we support, produce and inform on effective research, models, initiatives and demonstrations that advance career learning, K–14. For more information on CCL or other JHF initiatives, please visit us at [www.jhf.org](http://www.jhf.org).



Karen Wolk Feinstein, PhD

A handwritten signature in black ink that reads "Karen Wolk Feinstein". The signature is fluid and cursive, with the first name "Karen" being more prominent.

Karen Wolk Feinstein, PhD  
President and Chief Executive Officer  
Jewish Healthcare Foundation

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# INTRODUCTION

Education, in the modern economic and social context, is not only a matter of personal development, but also the engine for workforce development. A literate, skilled and flexible workforce is the central driver of progress in a globally competitive economy. No education system can continue to produce an undereducated, underachieving workforce and remain competitive.

Therefore, educators, employers and policy makers must ask if the current education system does the following for its students:

- Increases student proficiency in math, science and reading to a globally competitive level;
- Meets the needs of the 21<sup>st</sup> century learner;
- Effectively engages students in the world of work;
- Keeps pace with changing workforce demands related to new technology, rapid innovation, globalization and self-direction; and
- Provides student career preparation that meets the requirements of a competitive workforce.

The U.S. education system does not achieve the above for its students and/or does not achieve them sufficiently. The education system will be continually faced with changing needs of its students and demands of its community. Its ability to respond to those changes is more important than ever, so we hope that this paper provides a clear framework for action.

## Fundamental importance of the workforce

Economic theory identifies four macro variables that account for national, or regional, wealth in a modern, developed economy:

- Natural Resources
- Capital
- Technology
- Human Skills and Ingenuity (educated human capital)

In the 20<sup>th</sup> century, the relative importance of these variables was generally balanced. In the 21<sup>st</sup> century, however, leading economists, such as Lester Thurow of MIT, believe that human capital is and will be the key differentiator between winning and losing nations. (Thurow, 1992) Why is this?

The history of the 20<sup>th</sup> century shows that while natural resources can be important contributors to wealth, they are not the ultimate determinants of it. Countries such as Japan, Taiwan, Singapore and South Korea grew to become major international economic forces despite having relatively poor natural resources. Russia and the former Soviet Republics, however, have tremendous natural resources but generally low standards of living and economic performance, as do many oil-rich states. Thurow's research suggests that, for the most part, natural resources have ceased to be a primary source of economic advancement.

It may be surprising to note that the second and third determinants of wealth, capital and technology, have also weakened in their influence on economic success because both capital and technology are highly mobile. International financial markets make it possible for expansion capital to be acquired to fund good ideas and successful business ventures in most parts of the world. Certainly, access to capital is not equal throughout the world, but it has ceased to be the scarce resource that it once was. Technology is also generally portable. As Kenneth Gray and Edwin Herr (1998) note:

*The manufacturers of the latest in technology are willing to sell it to anyone, anywhere, if they can get their price. For these reasons, both natural resources and technology/capital are less important than in the past. This leaves only one factor from which a country can gain strategic advantage: its people, its "human capital."*

Further,

*Among all the riches a nation may possess, its people—its human resources, its human capital—are the most important. The value of this human resource depends not on size, however, but on the occupational and intellectual skills its members possess. At least in this regard history is clear: a large "unskilled" population is a detriment to national economic growth and to a high standard of living.*

The causes of economic progress, higher wages and higher standards of living in modern developed societies can be found in high levels of workforce productivity—gained in part by technology, but mostly through the skills and ingenuity of the people who use and leverage that technology. Only through increasing levels of productivity can standards of living increase, and can nations, regions, communities and individual organizations have the highest skilled workforce that is the most productive and innovative. Lester Thurow echoes this point when he notes that, "Productivity or output per hour of work is the central factor determining the ability to generate a world-class standard of living; it is not possible to divide what is not produced." (Thurow, 1992)

The lesson to be learned is a simple but profound one—industrialized nations and regions cannot compete on the basis of low wages but must, instead, seek to create a highly-skilled workforce that will enable firms to pay high wages and still be price competitive. The strategy for the U.S. must be to make the nation’s workforce so productive that it can produce more than competing locations, thereby advancing wealth creation and raising the overall standard of living.

Sectors that serve the broader economy, whether they are private services such as health care, or public services such as government or public education, must also operate at high levels of productivity and efficiency. Inefficiencies in such services result in a drain of resources from production sectors and households that have to pay for these services either directly or indirectly (via taxes). Such inefficiencies limit the capital available for investment and economic growth. With health care now consuming 16% of U.S. economic output, major inefficiencies in the sector carry significant opportunity costs for the national economy. (Kaufman and Stein, *Washington Post*, 2006) Service sectors are typically labor intensive and, therefore, workforce skills, knowledge and productivity are critically important.

*The Summit focused my attention on and opened my eyes to two key issues. The first is the extent to which our nation’s education systems have failed to meet our workforce demands – a problem that has resulted, in great measure, from the change in attitudes among parents, teachers and advisors about how one should prepare for the workplace. In particular, the transformation of college attendance from an option to the option for workforce preparation has created a decline in interest in technical and practical training for projected high-growth careers of the near future. The second issue, to quote Mark Roosevelt (Superintendent, Pittsburgh Public Schools), is that we don’t have a job crisis in this country, we have a skills crisis. And we will not overcome this problem until we can act on the fact that 21<sup>st</sup> century learners are different from past learners and, therefore, their education and training must be uniquely fitted for their learning styles, tools and environments. In short, the Summit has obliged me to rethink our current focus on the one way to win if we are to meet the educational challenges of today to produce the workforce for the jobs of tomorrow.*

— Dr. Jorge Klor de Alva, senior vice president, Academic Excellence, University of Phoenix

## The “knowledge” economy

The rise of knowledge as the driver of economic success is a fact, as knowledge is required across the workforce spectrum. This “knowledge economy” has highlighted the creative class as an important driver of invention and improvement of products and services. Their educational paths generally include a four-year degree and, therefore, have led to the belief that a four-year degree is the “right” route to success. But the creative class encompasses only a small proportion of the U.S. workforce. The remainder of the workforce must produce complex, quality goods and services in volume and do it at a steadily higher level of productivity. Economic success is not only dependent on the rise in knowledge of the creative class but on the rise in “knowledge” of every class (creative, production or otherwise) in the workforce. As Kenneth Gray and Edwin Herr (1998) note:

*If the route to success is inventing new products, the education of the smartest 25% of the labor force is critical. If the route to success is being the cheapest and best producer of products, new or old, the education of the bottom 50% of the population moves to center stage. This part of the population must staff those new processes. If the bottom 50% cannot learn what must be learned, new high-tech processes cannot be employed. If the education of the bottom half moves to center stage, so too must workforce education, which we have defined as education and training below the baccalaureate level.*

Thurow echoes these sentiments in one of his recent works when he notes that:

*A knowledge economy requires two interlocking but very different skills sets. Knowledge creation requires highly educated creative skills at the very top of the skill distribution. Knowledge deployment requires high-quality skills and education in the middle and bottom of the skills distribution.*

It is critically important for the U.S. to involve education, business and government in workforce development. Because the 21<sup>st</sup> century economy is driven by high-productivity and skilled processes, an unskilled workforce is not a resource. It is only a “potential” resource, and its potential can only be realized through high-quality education and skills development.

Furthermore, technology and work processes are being improved or supplanted at a rapid pace. In such a fast-paced, change-oriented working environment, a workforce must be equipped with the personal learning skills and adaptability traits required to keep pace. “Lifelong learning” is not just a catch phrase; it is becoming a necessity. Work will not continue to be done in the way, or even exist in a form that we will recognize a decade or two from now. Given this new economic reality, it is clear that the U.S. cannot afford a workforce that has low levels of academic literacy, skills attainment and adaptability.



**There is a clear need for better basic education:**

- A 1994 study by the National Center for Education Statistics found that 48% of the population sampled felt that they lacked adequate literacy skills to perform their job.
- The American Management Association reported that 38.3% of job applicants tested in 1999 lacked sufficient skills for the positions they sought. (American Management Association, 2000)
- According to a 1998 report by the National Association of Manufacturers, “40% of all 17-year-olds do not have the necessary math skills – and over 60% do not have the necessary reading skills – to work in a \$33,000 per annum production job at a modern auto plant. (National Association of Manufacturers, 1998)
- The Southport Institute for Policy Analysis found that meeting training needs is particularly difficult with small firms (which employ 57% of the total workforce). Forty percent of small firms reported that they have basic skills deficiencies in their workforce, but only 5% believe that they have the resources to conduct training to correct the problem. (Hollenbeck and Anderson, 1992)
- 23 million or 20% of American workers read at no better than an eighth-grade level. Yet, most of the reading material in the workplace is geared toward at least a ninth-grade comprehension level. (Franklin McClure, 1993)
- Sixty-three percent of American employers say that high school graduates have not learned the basic skills needed to succeed at work; only 4% of these employers say that graduates have sufficient writing skills, and 5% say they have satisfactory math skills. (Thurow, 1999)
- A National Association of Manufacturers study found that 57% of manufacturers stated that they cannot advance technology with their current labor force.
- Nearly three-quarters (72%) of incoming high school graduates are viewed as deficient in basic English writing skills, including grammar and spelling. Over half (58%) of responding employers say critical thinking and problem-solving skills are “very important” for incoming high school graduates’ successful job performance, yet nearly three-quarters of respondents (70%) rated recently hired high school graduates as deficient in critical thinking. (The Conference Board, Corporate Voices for Working Families, Partnership for 21<sup>st</sup> Century Skills, and Society for Human Resource Management, 2006)





*“I see a step forward when schools have, as part of their culture, the connection to the future and work for students. And they embed it in the curriculum, they embed it in what they teach their teachers, they embed it in the day-to-day life of students; connect them to a plan for their future in a career.”*

— Summit participant

## Lack of career-oriented education

As the rise of skills and knowledge becomes important to increasingly broad parts of the U.S.’ industry and society, training has become more compact and narrow. Americans have seemingly put their collective faith in a “one way to win” philosophy, whereby the vast majority of “training” is assumed to occur through the pursuit of a four-year baccalaureate degree. The idea that the only way to be successful is to get at least a bachelor’s degree has reached almost epidemic proportions in the U.S. In fact, 72% of high school graduates are enrolled in higher education within two years of high school graduation, and 95% say that they are doing so to eventually earn a bachelor’s degree. Compare this to the fact that only 4% of high school graduates indicate that they plan to study in technical areas at pre-baccalaureate one- and two-year levels. (Gray and Herr, 2000)

Vocational training in high schools, and technical- and career-oriented post-secondary education at the pre-baccalaureate level, receive little attention in a society placing such intense singular value on four-year degrees. The problem of workforce education is further compounded due to the fact that training has also declined in the U.S. workplace. As Kenneth Gray and Edwin Herr (1998) note:

*Arguably, the U.S. has the best educated professional or salaried workforce in the world. But still the country is not doing as well in global commercial competition as would be expected. What is the problem? The problem is that, unfortunately, the country, by many indicators, also has the worst educated and unskilled nonprofessional/hourly workforce among the major economic powers. One reason is the lack of investment in workers at this level.*

U.S. firms, for example, spend less on workforce training than any major competitor nation. According to a report by the Congressional Office of Technology Assessment (OTA), only 1.2% of all private sector workforce compensation is spent on training. Statistics and multiple research studies show that it is incorrect to assume that firms will provide occupational training if high schools do not—only one in five workers ever receives any training from their employers during their career (and those that do are usually middle- or upper-level managers, not hourly wage personnel). (Carnivale, Gainer and Villet, 1990)

It is very hard to see, against this background of poor educational performance, how the U.S. will continue its economic leadership and the high standard of living to which much of the population is accustomed. The U.S., in the face of intense global competition, cannot sustain economic leadership if it dramatically underperforms on educated and skilled human capital—the leading factor influencing business success.

While the great majority of America's high school graduates are being directed along the four-year degree path (whether they are suited to it or not), a large volume of technical jobs—jobs whose workers use math and science principles in their work—requiring only a post-secondary pre-baccalaureate education are going unfilled. Throughout the 1990s, industries in information technology, precision manufacturing, electronics production, building construction and health care (indeed, virtually all industries employing technical workers) faced workforce shortages (Carnivale, Gainer and Villet, 1990). These challenges continue unabated. U.S. education remains geared toward student enrollment in four-year degree programs and, as a result, is increasingly neglecting legitimate education and training options at the certificate and two-year degree levels. These more vocationally oriented qualifications provide entrée to a broad variety of rewarding jobs with family-sustaining wages, yet there is strong evidence that too few students are prepared for, consider, or are informed about these pathways.

Economic trends point to the need for a more highly, occupationally-skilled workforce at a time when vocational education and training is experiencing enrollment decline. Multiple research reports show that workers in the future will need higher levels of skills, particularly in mathematics, science and reading comprehension, as well as decision-making and teamwork skills. In addition, workplace literacy will increasingly require “self-directed learning” whereby one teaches oneself new occupational tasks. Yet few observers predict that the average high school graduate, from the lower 2<sup>nd</sup>, 3<sup>rd</sup> or 4<sup>th</sup> quartiles of their class, will be equipped to manage this type of self-directed learning. Overall, these are not the skills being imparted to the vast majority of high school graduates.

Health care provides a  
unique ladder of diverse  
career opportunities that  
few high school students  
or graduates understand.



## Negative effect of the skills gap

There is an undeniable negative economic impact on the regions and communities in which occupational skills shortfalls occur. For example, in one research project it was found that 22 unfilled precision tool worker positions in a Pennsylvania town resulted in a loss of \$2.4 million in personal income within the community (Passmore, 1998). On a national basis, a study by the Hudson Institute predicted that unless the skills gap is closed in the U.S., it will generate a 5% negative movement in gross domestic product. (Judy and D'Amico, 1997) For the first time in history, we may see underperforming human capital become the primary cause for serious recessionary conditions in the American economy.

A mismatch of employer workforce requirements (demand) and the supply of labor with these skills may not only result in opportunity costs, it may result in the outright loss of employers altogether. Companies are choosing to relocate to regions or nations that have the workforce skills they require. In the U.S., places such as the Research Triangle area in North Carolina have geared themselves to fulfilling employer workforce demands.

In health care, the largest and fastest growing sector of the national economy, the shortage of support staff, nurses and technical personnel has reached crisis proportions. Health care provides a unique ladder of diverse career opportunities, yet few high school students or graduates have been exposed to, much less understand, the job opportunities and career progression that await them in this sector.

## The healthcare sector: indicative of the challenge

Health care is the largest employment sector in the nation, employing 13.5 million people. It is also the leading creator of new U.S. jobs, with 3.6 million new positions projected to be generated between 2004 and 2014.

Distributed across 545,000 establishments, health care provides employment in every state in the nation. Healthcare establishments exist in diverse geographic settings ranging from small rural communities to large urban centers, with a major concentration of advanced specialty care institutions located in the nation's urban cores. The importance of the distributed structure of healthcare employment is punctuated by the fact that it is often the leading employer in small U.S. towns and cities, and is a key economic engine in urban communities.

With jobs ranging from janitorial staff to the most highly skilled surgeons, from secretarial personnel to senior health system administrators, from parking lot attendants to helicopter pilots, no other sector of the economy provides such diverse and broadly distributed employment opportunities. Healthcare occupations provide a range of wage and salary positions supporting families across the U.S. socio-economic, educational and geographic spectrum.

Education and training demands for healthcare careers are split into three main categories: on-the-job training only; post-secondary education below the bachelor's degree level; and a bachelor's degree or higher.

Of these, the jobs requiring a bachelor's degree or higher form a comparatively small component of total demand (22%). Indeed, over 78% of all healthcare jobs do NOT require a bachelor's degree. (U.S. Department of Labor – Bureau of Labor Statistics)

It is clear that post-secondary education and training, below the bachelor's degree level, is of critical importance in meeting the workforce needs of the healthcare sector. Similarly, the production of work-ready high school graduates is critical to the efficient and productive operation of our healthcare system.

### Training Requirements for Healthcare Occupations:

Percentage of Trained Workers Required by Training Level for Projected National Workforce Increase 2004–2014

Healthcare Occupation Training Requirement	Percent	Number
First professional degree	5.5	165,000
Doctoral degree	0.3	9,000
Master's degree	5.7	170,000
Bachelor's or higher degree, plus work experience	2.6	79,000
Bachelor's degree	7.4	222,000
Associate's degree	27.4	823,000
Postsecondary vocational training	15.6	468,000
High school + moderate-term, on-the-job training	10.8	325,000
High school + short-term, on-the-job training	24.6	737,000

*U.S. Department of Labor—Bureau of Labor Statistics*

Within health care, as in most other sectors of the U.S. economy, the education and workforce preparation system needs to provide an appropriately educated and trained populace across a wide range of education levels. However, just as demand for a broadly tiered, multi-level system of appropriate educational attainment has come to the fore, education and training opportunities within the nation have compacted and narrowed, following the “one way to win” pathway as outlined above.

While the pursuit of a bachelor's degree in general, and immediately after high school in particular, may be the appropriate path for many students, there is sufficient evidence that this path is a poor investment for many who embark upon it unprepared. This current condition prompted a critical look at the policies that promote the pursuit of a bachelor's degree as the only legitimate path.



# BRAINSTORMING SOLUTIONS: THE SUMMIT PROCESS



High Schools & Careers:  
The New Value Proposition

## High Schools & Careers: The New Value Proposition

The Jewish Healthcare Foundation (JHF) has recognized the education and skills challenges facing the healthcare sector. In early 2008, JHF issued a framing paper, entitled “High Schools & Careers: The New Value Proposition,” that compellingly illustrated the problems with the current education-to-career continuum. It was designed to be provocative, to stimulate new ideas and thoughts on potential solutions to U.S. education and workforce preparation challenges. While the paper focused on the challenges and opportunities in the healthcare sector, it was recognized that many of the issues are universally seen in other sectors of the U.S. economy. In effect, the education and workforce issues facing health care are seen as metaphors for the issues facing the entire national economy. Using graphics, key statistics and information from leaders in U.S. education reform and career training, the framing paper challenged readers to think about actions they may take to stimulate change in the system.

The framing paper was released in advance of a national Summit hosted by JHF—*High School & Careers: The New Value Proposition*. The one-day event, held on April 29, 2008, focused on high schools and career connectivity. Its goal was to assemble actionable recommendations on how to make career ambition and career knowledge a core part of the high school experience and an essential component of high school reform. The invitation-only event assembled more than 100 national thought leaders from three sectors—business, education and human services—for a rare opportunity to share collective wisdom from three vantage points and to develop a common reform platform.



The Summit adopted an atypical format that emphasized small group discussions and promoted dialogue, debate, idea sharing and frontier thinking. In small groups, participants explored the relevance of classroom learning to the world of work, our ability to engage students to apply their learning in work settings, and our capacity for early identification of at-risk students to hone their career aspirations and pathways. At the Summit’s conclusion, participants proposed improvements that enhance student preparation for careers and lifelong learning, and an action plan for reform on regional levels with national policy support.

Participants in the Milestones working group were asked to identify measurable milestones that students should achieve or experience along the path to career identity and preparation.

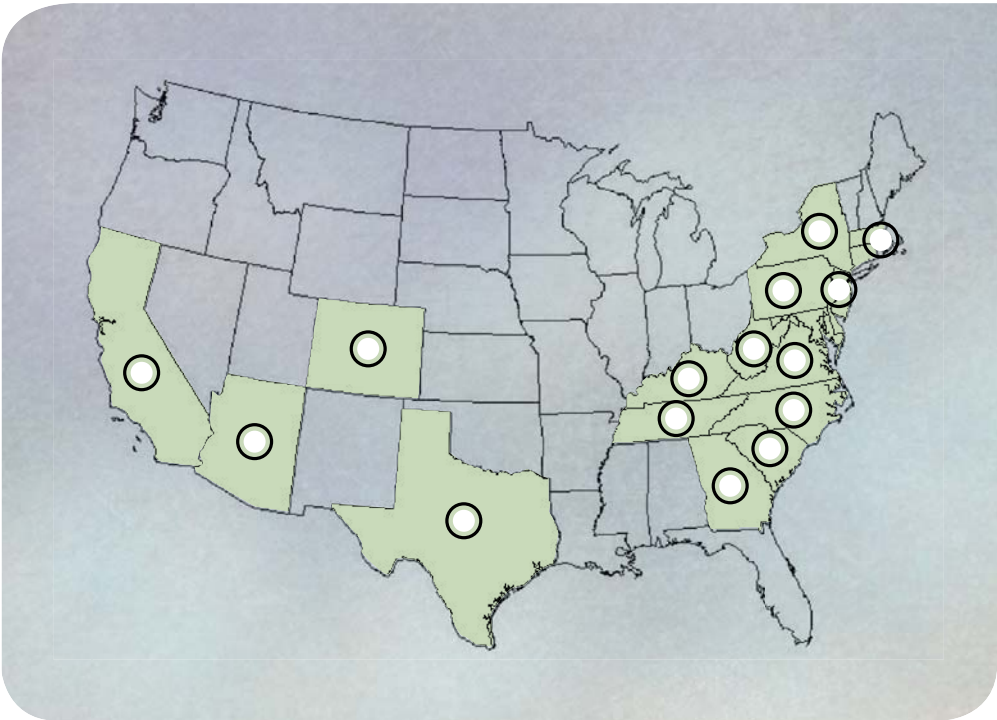
Summit Participants

Over 100 Summit participants represented 15 states and the District of Columbia and the following organization types:

Participant Organization Type	Number of Participants
K–12 Education/ School	20
Social or Youth Services Agency	15
Higher Education	12
Healthcare Organization	12
Foundation	10
National Association or Council	10
Research Institution (Think Tank)	8
Workforce Agency/ Workforce Development	7
High School Student	7
Government	5
Economic Development Organization	2

*The Summit showed participants how excellent high school programs make quality education relevant to careers, using work opportunities as ways to teach and reinforce skills. Health career programs are especially well-suited to the integration of education and careers, in both the U.S. and the United Kingdom. It was especially inspiring to learn about the Michael E. DeBakey High School for the Health Professions and how work experiences are motivating disadvantaged students, helping them gain employable skills as well as academic skills. The presentations revealed not only why and how schools should incorporate career orientation and work experience components, but also highlighted the crucial importance of effective implementation and administration. I was heartened to find so many participating teachers, students, administrators and policymakers ready to bring home and use the lessons of the Summit to make their schools more relevant and rewarding to students and ultimately the broader society.*

— Robert Lerman, Professor of Economics, American University & Senior Fellow, Urban Institute





## Summit format

The morning of the Summit was dedicated to presentations by the keynote speaker, Willard Daggett, EdD, president of the International Center for Leadership in Education (Albany, New York), and three panelists who outlined key issues and opportunities pertaining to high schools and career relevance. In the afternoon, the participants divided into four work sessions to discuss issues and opportunities in career-oriented education from multiple perspectives.

Dr. Daggett helped to frame the most important issues facing the U.S. public education system and set these issues in the context of creating a qualified workforce for a competitive U.S. economy. He started with what would appear to be a simple change—the school calendar—noting that people are aware that the September through June school year was developed when the U.S. was an agrarian-based economy, and that despite the new global and technological economy, the school

calendar has not changed. This was an example of not only how the education system lags behind economic changes, but also of how long and how far behind it has fallen.

Unfortunately, too much of the debate in education reform focuses on structural and institutional issues—such as the established school calendar vs. a year-round school calendar, public schools vs. charter schools, and traditional vocational education vs. career and technical education—without making a lot of progress and without prioritizing other key issues. Dr. Daggett challenged the group to move beyond these debates by emphasizing that “the issue is not the organizational structure you necessarily put in place. The issue is what happens at the point of contact between teacher and student. The issue is instruction. Good instruction. Good instruction that is academically rigorous, but also relevant.”



The Morning session facilitated by Dr. Daggett.

Dr. Daggett has built a strong following of educators from across the country through his persistent and research-based advocacy for “rigorous and relevant” instruction. He pointed out that the biggest single change every school district in this country faces is that “the kids are fundamentally different: the 21<sup>st</sup> century learner is truly different from the 20<sup>th</sup> century learner.” And the reason why? It is a one-word answer: technology. Students today do not know a world without the Internet, e-mail and, perhaps most important, social networking. Technology is part of these students’ “DNA,” and instruction needs to reflect the means by which these students acquire and absorb information—fast-paced, virtual and multi-faceted.

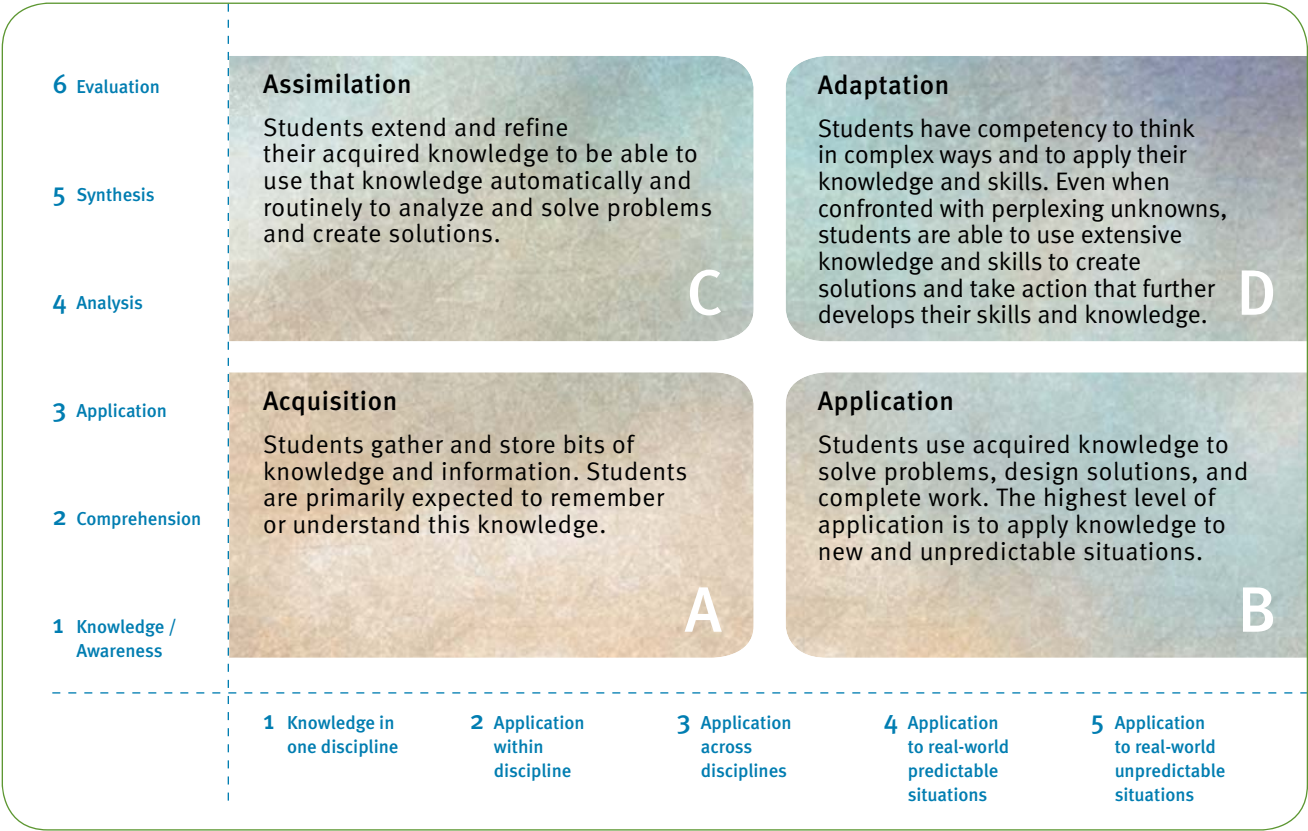
This requires significant changes to traditional curricula and classroom instruction. Dr. Daggett reminded the group that “the real world doesn’t function anymore in biology, chemistry and physics. It’s biochemistry. It’s nano-technology.” Dr. Daggett assured the group that revamped schools that match the real world “will not change the importance of understanding increasingly sophisticated academics and knowing how to apply them,” but what will change is that there will be a generation of students who are excited and motivated by academic applications and prepared for a career in the 21<sup>st</sup> century. To understand Dr. Daggett’s view on creating a qualified workforce is to realize that “relevance makes rigor possible” and allow this straightforward one-liner to guide every aspect of curricula development and classroom instruction.



Keynote speaker Willard Daggett, EdD, president of the International Center for Leadership in Education.

Dr. Daggett presented a framework to illustrate the desired connectivity between academic rigor and career-oriented relevance in education that provides application to real-world exemplary applications. The work sessions focused on ensuring that the reforms proposed were taught and performed in the “D” quadrant.

### Rigor/relevance framework chart



- Quadrant A:** Low-level knowledge with no application  
Example: State standardized testing
- Quadrant B:** Low-level knowledge with a lot of real-world application  
Example: Traditional vocational education
- Quadrant C:** Very sophisticated knowledge without a lot of relevance  
Example: Four-year college preparation
- Quadrant D:** Very sophisticated knowledge with a lot of real-world application  
Goal of education programs



Panelists enhanced the discussion by sharing their various backgrounds, experiences and lessons learned through three rounds of questions posed by Dr. Daggett and reactions from panelists and participants. Panelists provided analytical and experiential responses that were research-based.

Panelists included the following experts:

- Candace Burns' current position as Director of Workforce Development at Dana-Farber Cancer Institute allows her to work with leaders within school systems and hospitals to develop programs and initiatives. These offerings are diverse but have a common goal of providing meaningful learning experiences for youth.
- Peter Stansbie, from the United Kingdom, serves as Director of Organizational Development at Skills for Health, one of the various Sector Skills Councils (SSC) charged with increasing skills and flexibility in its workforce. SSCs are also charged with increasing the number of people entering the workforce, especially in high-demand careers (which are primarily "low-grade jobs") that demonstrate a skills gap. Their biggest challenge is to increase interest in those careers and the skills of people entering those careers.
- Dr. Charlesetta Deason, Principal of Michael E. DeBakey High School for the Health Professions, a magnet school in Houston, Texas, has the challenge of ensuring that her curriculum and teachers address the needs of today's learners. Over time, they discovered that a curriculum full of rigor and experiential learning tools (highlighted in quadrant "D") was required for student engagement. Most important, they continue to address the needs of the digital learner through student feedback, new teaching methodologies and professional development.

Full details of the keynote speech, panelists' contributions, and working group discussions can be found online at <http://www.hcfutures.org/summit.asp>. This web page contains transcripts from each component of the Summit, video footage and links to relevant resources.

Panelists believed that the most important experience for students in any program will be "work experience" that is beneficial to both students (building work ethic, teamwork, respect, responsibility) and employers (providing needed skills). In the classroom, an integrated curriculum can facilitate preparation for such experiences and produce successful graduates. For example, teachers teach an academic concept and allow students to explore real-world applications of their interest and apply those to the lesson. In addition, educators can partner with industry professionals to teach topics and/or make them more relevant. All these represent opportunities within the school system to link health-related materials and experiences to teaching.



(l to r) Panelists: Dr. Charlesetta Deason, principal, Michael E. DeBakey High School for the Health Professions; Peter Stansbie, director of organizational development, Skills for Health; Candace Burns, director of workforce development, Dana-Farber Cancer Institute. Keynote: Dr. Willard Daggett, president, International Center for Leadership in Education.

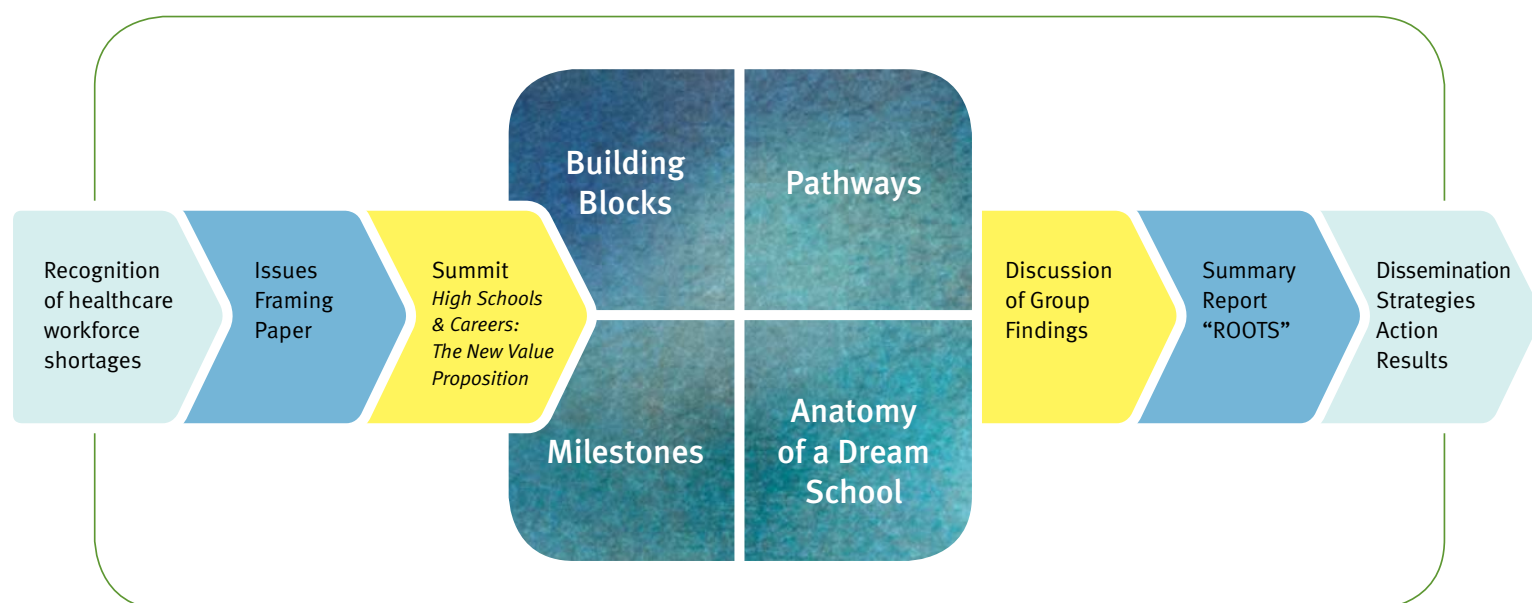
To create support for such programs, panelists suggested that schools change from operating as islands to being parts of a network that communicates with and relies on an engaged community, especially parents, youth-serving agencies and employers. Funding agencies should support such collaborations and advocate for integrated education at the policy level. Also, industry and funding agencies need not wait for schools to reform to take action. For example, after school, weekend and summer programs managed through a community-based organization are essential for thriving schools. From established programs such as the Boy Scouts and Boys & Girls Clubs to local programs, employers and funders can find ways to support and be part of students' career exposure and experiences. These experiences can be a way to reach students who are not academically strong and may need other stimuli to recognize the relevance of their learning in school.

However, for any school to have success, its educators must continually examine ways to make the classroom setting nimble and ready to meet the changing needs of students. The one measurable point of transfer of knowledge is instruction. DeBakey High School came across this realization by chance. Educators saw differences in students' behavior and the way they processed information. To figure out why, administrators assembled a team of teachers, a student advisory committee, and asked students for their opinions on the instruction: Why weren't students learning? Students explained what was (and was not) happening. Administrators listened, and this led to professional development to increase the tech IQ and inter-generational understanding of teachers. Their willingness and readiness to embrace change in learners makes the difference.

In closing, panelists highlighted that this technical divide exists at our workplaces as well, since employees may not use commercial technology as readily or in the way students currently do. So as employers are looking to bring in students or to mentor students, they should also increase their tech IQ and inter-generational aptitude.

The work sessions were led by an experienced facilitator and comprised national leaders from education, human services, workforce development, public policy and academia. Additionally, two high school students participated in each session. Dr. Daggett, the keynote speaker and lead facilitator, rotated through each of the four sessions providing support and answering questions.

## Summit process – from Issue to action



*The New Value Proposition Summit coalesced and surfaced critical issues around helping students bridge the gap between high schools, post-secondary education and opportunities in critical industries such as health care. By bringing together diverse leaders from business, government and education, the Summit built knowledge and momentum for regional and national efforts to provide students with multiple pathways toward college and career.*

— Dr. Ash Vasudeva  
Co-Executive Director  
School Redesign Network  
Stanford University

## Working groups

This Summit was designed to foster dialogue, debate, idea sharing and frontier thinking. To this end, it included four dynamic working groups in which attendees were tasked with discussing and designing ideal career education systems for students. Each of the four working groups was asked to address the issues and opportunities using a different framework. The four groups comprised:

**Building Blocks** – Working to identify experiences (aka “building blocks”) – such as classroom learning, career exploration, mentorships, internships or part-time jobs – that are crucial to successful development of career identity. The group sought to construct a model career education system that includes the best of these experiences, along with appropriate support and outreach systems.

**Pathways** – Seeking to highlight the various pathways and decision-making points shaping student education and the introduction and pursuit of career relevance.

**Milestones** – Identifying measurable milestones that students should achieve or experience along the path to career identity and preparation. Participants were asked to consider where the career exploration and relevance journey starts; the intellectual, social and emotional milestones to be reached; the value of certain milestones; and potential ways to measure progress.

**Anatomy of a Dream School** – Exploring existing career-focused schools in the U.S. and the key elements contributing to their success. The group was asked to mix and match successful components of the most accomplished programs to create a new “dream” model.

## Closing session

At the end of the day, all Summit participants came together for a discussion, moderated by Dr. Daggett, to present the topline ideas generated in their individual group sessions. Key outcomes from the sessions are presented on page 18.



Dr. Daggett moderates the Closing session in which each working group reports its outcomes.



# SUMMIT SYNTHESIS: MAJOR THEMES EMERGING FROM THE WORKING GROUPS

While the working groups covered a considerable number of concepts and ideas for stimulating enhanced education-to-career linkages and relevance, certain key themes were evident within their deliberations. These key themes are:

- Student Support
- Proactive Guidance
- Career Exposure, Exploration and Experience
- Relevant and Rigorous Education
- Flexibility in the System

Each of these key themes is addressed below with a description of the theme and a graphic showing ideal conditions for each, plus potential positive outcomes from the deployment of these actions.

## Student support

Students benefit from a range of support mechanisms. Ideally, students will be supported in their learning and skills development by families, caregivers, the community, teachers and other influencing parties. This support provides the essential and fundamental security students need to be able to take risks, and extend and challenge themselves, plus it rewards them for their successes and learning experiences.

### Student Support

#### Ideal Conditions

- Support from home and family
- Engaged and supportive community
- Support from peers
- Access to character and confidence building extracurricular activities
- Proactive mentoring by adults
- Access to faith-based supports where appropriate

#### Collective Outcomes

- Students are secure in taking chances and challenging / stretching themselves
- Students have resiliency to recover in the face of set-backs
- Students achieve self-confidence and self-esteem
- Students provided with ongoing encouragement and expectations
- Students benefit from positive role models
- Students benefit from peer-to-peer support
- Students learn in an environment where education and skill attainment are valued

## Proactive guidance

For too many students, the only guidance they get in school is a brief meeting once a year with a counselor. Best practice schools, however, are taking a much more hands-on approach to guidance in multiple forms—including traditional academic guidance, career guidance and support. The preparation of formal student plans, communicated to the students and their families, is a step taken in an increasing number of schools. Likewise, students can also benefit from more informal guidance provided by mentors, coaches, and other trusted adults and role models.

### Proactive Guidance

#### Ideal Conditions

Academic counseling
Career counseling
Individual student plans
Career pathways guidance
Engaged parents or guardians
Engaged teachers
Adult mentors

#### Collective Outcomes

Students' academics are linked to real-world relevance
Students understand career options
Students' plans designed to encourage performance
Students understand career pathways and educational requirements
Students receive proactive assistance in staying on track
Enhanced motivation and performance of students
Students maintain positive outlook for the future

## Career exposure, exploration and experience

Starting early, in elementary school, and building progressively through middle school and high school, students should be introduced to the world of careers, explore various career options, learn about education-to-career pathways, and gain direct experience in workplace settings.

### Career Exposure, Exploration and Experience

#### Ideal Conditions

Early exposure to work and careers (K–6)
Career exploration in middle school
Career exploration+experience in high school
Field trips
Job shadowing
Internships
Part-time employment
Apprenticeships

#### Collective Outcomes

Imparts relevance to education
Motivates performance
Provides hope and dreams for the future
Provides connectivity with peers who have similar interests
Builds work ethic and work readiness
Facilitates specific skills development
Develops students' soft skills
Builds career “resume” and marketability
Builds social networks

Relevant and rigorous education

Summit participants agreed that students need to be provided with an education that challenges them to excel and engages them with curricula that are relevant to their interests and potential career areas. Such curricula relevance has been found to engender greater student engagement in school. High academic, attendance and performance standards should be expected, and students should be actively assisted if they fall behind. This expectation of performance and high school graduation is further supported by guidance and individual attention.

Relevant and Rigorous Education

Ideal Conditions

- Practical application examples always used for relevance
- Learning content connected to real-world applications
- Rigorous curriculum and high expectations
- Engaged workplaces and employees providing students with real-world experience
- Use of non-traditional teachers and instructional methods
- Provide access to enhanced resources and technology

Collective Outcomes

- Students achieve enhanced educational performance
- Practical skills base of students is built
- Students remain motivated to attend school
- Educational programs and career exposure reflect local career opportunities
- Schools gain enhanced resources by partnering with outside organizations and employers
- Students gain experience in the application and use of technologies
- Students learn to apply their knowledge and skills to problem solving



Dr. Wendy Etheridge Smith, director of community initiatives & partnerships, United Way of Allegheny County, poses a question to the Panelists.



Flexibility in the system

Schools need to meet students’ needs, and this may include the flexibility to have longer class schedules and terms, to promote students at different rates depending on their academic progress, and to amend curricula to meet the specific needs and opportunities in their communities. Recent trends toward standardization are creating a one-size-fits-none system that is unable to react and adjust to the specific needs of the individual learner and his/her community. Standards should be set high, but schools need to be provided with the flexibility they need to achieve those high standards.

Flexibility

Ideal Conditions

- Extended school year (beyond 180 days)
- Extended school days
- Use of non-traditional educators
- Flexibility in standardized testing
- School resources leveraged for community use
- Non-traditional school structures

Collective Outcomes

- More time to educate students beyond the basic 3R’s
- Access to specialized coursework and pathways of interest to the student
- Students able to learn specific skills
- Learning conducted at student’s own pace
- Enhanced student engagement and retention
- Students exposed to non-school environments and workplaces
- High school graduates meet the needs of local employment clusters
- Ability to leverage school assets for adult education and training in the community

Currently there are schools active in deploying programs and initiatives centered on these key themes.

# A CHECKLIST FOR ACTION

As the previous chapter showed, several key themes and associated actions were recommended by Summit participants. These themes center on Student Support, Relevant and Rigorous Education, Proactive Guidance, Flexibility in the System, and Career Exposure, Exploration and Experience.

Based on these findings, it is recommended that school leadership consider the following checklist of ideal actions when evaluating their schools, programs and initiatives.

## Checklist for action

	Schools	Family and Guardians	Community Members and Organizations	Employers
Student Support	Provision of a safe school environment Creation of peer-support groups Confidence- and character-building extracurricular activities	Regular school-to-home and home-to-school communication Safe and nurturing home environment Out-of-school tutoring	Out-of-school tutoring Mentoring by adults Targeted role models Public safety	
Proactive Guidance	Regular one-on-one academic counseling Formal career counseling and career pathway guidance Development of individual student plans Teachers understand their role in fulfilling individual student plans	Family or guardians in agreement with individual student plans Family or guardians counseled on career pathways mentoring by adults	Mentoring by adults	Input to career pathways and associated student plans
Career Exposure, Exploration and Experience	K–6 <sup>th</sup> grade career exposure activities Specific career exploration opportunities provided in middle school Career exploration and specific work experiences in high school	Input and advice regarding work and the working experience	Mentoring by adults	Access to facilities for visits and work exposure Provision of internships and work experiences Job shadowing
Relevant and Rigorous Education	Integration of applied case studies, exercises and examples into school curriculum Adoption of career pathways and associated educational programming options			Input to curriculum and case studies
Flexibility in the System	Policy changes that allow flexibility in school calendar and work-day timing			Access to facilities and resources for relevant school projects and learning experiences

See Pittsburgh Regional Compact document: Educator in the Workplace: “An Incredible Opportunity for Business Leaders...” on page 56.  
 The Pittsburgh Regional Compact <[www.pittsburghregionalcompact.org](http://www.pittsburghregionalcompact.org)>

# SCHOOLS FOCUSED ON THE MAJOR THEMES

During the Summit, participants consistently emphasized the point that successful career education should be a K–14 effort, beginning informally at the earliest educational opportunity and continuing at appropriate levels through the elementary, middle and high school years, with support through the first two years of post-secondary education.

Of the more than 124,000 schools in the U.S. (97,382 public and 28,384 private), many existing schools at each educational level are actively engaged in the major themes and key actions identified by the Summit working groups. (U.S. Dept of Education statistics for 2005 by Data360) There is nothing better than having good, working examples of initiatives upon which to base strategies and actions. With the generous assistance of the International Center for Leadership in Education's Successful Practices Network, some useful exemplary programs at the elementary, middle and high school levels are described below. In addition, a case study is presented on the Science and Technology High School in Pittsburgh, Pennsylvania – a learning community for 6<sup>th</sup>–12<sup>th</sup> grade environments that creates one transition for students and deepens relationships between students and staff.



Student Support

Proactive Guidance

Career Exposure, Exploration & Experience

Relevant and Rigorous Education

Flexibility in the System



## Elementary school

### KIPP SHINE Prep (Houston, Texas)

Profile: The Knowledge Is Power Program (KIPP) was founded in Houston, Texas, in 1994 to help children from underserved communities develop the academic and life skills necessary to succeed through high school, college and employment. KIPP SHINE is a charter school and it is the only program that focuses on elementary education in a network of 57 schools. KIPP SHINE serves grades pre-K through 5. Website: <http://www.kipp-houston.org>

Theme	Initiatives
Student Support	<ul style="list-style-type: none"> <li>Teachers are available outside of school to students and parents</li> <li>Classrooms are led by a head teacher and teaching fellows</li> </ul>
Proactive Guidance	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Career Exposure, Exploration and Experience	<ul style="list-style-type: none"> <li>Instruction emphasizes the first KIPP value: Seek, which encourages students to make connections between what they learn today and what they will learn tomorrow</li> <li>Students in all grades visit the library at least weekly</li> <li>At the 1<sup>st</sup> and 2<sup>nd</sup> grade levels, math is taught in a workshop style, differentiating the material and emphasizing teamwork</li> <li>Curriculum emphasizes literacy and communication</li> <li>Students must commit to following the KIPP Pledge, which holds them accountable for behavior and learning</li> </ul>
Relevant and Rigorous Education	<ul style="list-style-type: none"> <li>Instruction is oriented around five key values: Seek; Honor; Imagine; Never Give Up; and Every Day</li> <li>These key values foster the skills KIPP students will need to succeed in their educational and professional careers</li> <li>Teachers maintain high expectations, including proficiency in both English and Spanish sounds and letters before entering Kindergarten</li> <li>Students are taught literacy, math, science and character development throughout the curriculum and across grade levels</li> </ul>
Flexibility in the System	<ul style="list-style-type: none"> <li>School schedule begins at 7:25 a.m. and ends at 5:00 p.m., with some instructional time on Saturdays</li> <li>The KIPP school year includes one month in the summer</li> </ul>

## Other highlights

Theme	Initiatives
Data-driven Education	<ul style="list-style-type: none"> <li>Teachers use assessment to track student progress and tailor lessons accordingly</li> </ul>
Use of Technology in Instruction	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Leadership	<ul style="list-style-type: none"> <li>N/A</li> </ul>
Teacher Supports/Professional Development	<ul style="list-style-type: none"> <li>Teachers are supported by mentors and also act as mentors to teaching fellows</li> <li>Teachers engage in professional development designed for KIPP programs</li> <li>Teachers, administrators and staff participate in a yearly national summit, sponsored by the KIPP Foundation</li> </ul>
Community Engagement	<ul style="list-style-type: none"> <li>Parents and students must commit to following the KIPP Pledge, which holds parents and students accountable for behavior and learning</li> </ul>

## Middle school

### Dana Middle School (Hawthorne, California)

Profile: Dana Middle School in Hawthorne, California, is a comprehensive school that serves 821 students in grades 6, 7 and 8. More than 40% of the school's population comes from school districts throughout Los Angeles County. The school's population is diverse: 54% Hispanic; 21% African American; 16% White; 6% Asian and Pacific Islander, and 13% Multiracial. The Dana community enjoys a new, state-of-the-art facility built in September 2007.

Website: <http://www.danamiddle.org>

Theme	Initiatives
Student Support	<ul style="list-style-type: none"> <li>• Before- and after-school intervention classes and reading and math</li> <li>• Individualized reading practice for students, tailored to reading level</li> <li>• Academic Improvement Program (AIP) for small-group instruction</li> </ul>
Proactive Guidance	<ul style="list-style-type: none"> <li>• Advancement Via Individual Determination (AVID) program provides mentoring and instructional support for traditionally underrepresented groups</li> <li>• School faculty actively advise and mentor 8<sup>th</sup> grade students (and parents) as they prepare to transition to high school</li> </ul>
Career Exposure, Exploration and Experience	<ul style="list-style-type: none"> <li>• 8<sup>th</sup> grade students visit the Aerospace Corporation to learn how satellites are launched</li> <li>• 7<sup>th</sup> and 8<sup>th</sup> grade students are required to develop an original science experiment; projects are presented at a public science fair</li> <li>• Teachers offer cross-disciplinary lessons that allow students to connect science, history and writing (for example) across disciplines and with their own lives</li> <li>• Humanities teachers offer an integrated research project (humanities, science and social studies) in grades 6, 7 and 8</li> <li>• Dana cultivates partnerships with local business and industry leaders for standards-aligned content and field trips, including the Aerospace Corporation, Northrop Grumman, Raytheon, Chevron and Boeing</li> </ul>
Relevant and Rigorous Education	<ul style="list-style-type: none"> <li>• Curriculum includes a variety of instructional methods, including lecture, small group work, projects and field trips</li> <li>• Instructional methods also include Socratic questioning, discussions, debate and student-generated rubrics</li> </ul>
Flexibility in the System	<ul style="list-style-type: none"> <li>• School schedule is flexible to allow math students to be grouped by learning level</li> <li>• Block master scheduling allows extended learning time in all curricular areas</li> </ul>

## Other highlights

Theme	Initiatives
Data-driven Education	<ul style="list-style-type: none"> <li>• Teachers are trained to parse state test data and tailor instructional methods and lessons to address areas of weakness</li> </ul>
Teacher Supports/Professional Development	<ul style="list-style-type: none"> <li>• Teachers have the opportunity to attend conferences, and school funds are reserved for workshops and classroom visitations at partner schools</li> <li>• Block scheduling allows for common planning time</li> </ul>

## High schools

### A.J. Moore Academy (Waco, Texas)

Profile: A.J. Moore is a 700-student magnet high school with studies beginning in 9<sup>th</sup> grade. The student body is 80% minority and 80% economically disadvantaged, but the school boasts a 94.6% graduation rate. Students elect to attend Moore; the only entrance requirement is an application indicating a desire to attend Moore and participate in one of six career academies. Website: <http://www.wacoisd.org/ajmoore>

Theme	Initiatives
Student Support	<p><b>Academic Supports</b></p> <ul style="list-style-type: none"> <li>• Help Eliminate Academic Tardiness (HEAT) after-school program helps students submit assignments on time</li> <li>• Assigning failing grades without interventions or support is not acceptable</li> </ul> <p><b>Social Supports</b></p> <ul style="list-style-type: none"> <li>• Students are able to access teachers at any time – teachers give their home phone numbers</li> <li>• Teachers communicate frequently with parents</li> <li>• Teachers and students negotiate a “social contract” for behavior</li> <li>• Teachers use the “Capturing Kids’ Hearts” program and “Boys Town” models to help students strengthen personal and life skills</li> <li>• Students can report concerns anonymously on the school website</li> <li>• Incoming 9<sup>th</sup> graders are required to participate in a 5-week summer induction program to support 9<sup>th</sup> grade success</li> </ul>
Proactive Guidance	<ul style="list-style-type: none"> <li>• Counseling staff develop close relationships with parents</li> </ul>
Career Exposure, Exploration and Experience	<ul style="list-style-type: none"> <li>• Strong partnerships with business and regional colleges</li> <li>• Students are required to participate in an internship between junior and senior years</li> </ul>
Relevant and Rigorous Education	<ul style="list-style-type: none"> <li>• Desire to engage in one of six career academies is a key requirement for admission</li> <li>• Advanced placement courses are available in 10 subjects</li> <li>• Project-based learning courses are required in the Academies</li> <li>• Based on input from business partners, professional skills are integral to the curriculum</li> <li>• Many teachers have professional experience outside of teaching</li> </ul>
Flexibility in the System	<ul style="list-style-type: none"> <li>• School schedule begins at 8:45 a.m. and ends at 3:55 p.m. to accommodate teenage sleeping patterns</li> <li>• Students are encouraged to take courses that qualify for college credit</li> </ul>



## Other highlights

Theme	Initiatives
Data-driven Education	<ul style="list-style-type: none"> <li>Teachers analyze state test results and test questions to identify curricular and instructional areas that need improvement</li> <li>School uses a “value-added” analytical method, which helps teachers decide how to support students (academically and psychologically) for state testing</li> <li>Students are tested every 9 weeks; data are used to determine whether student sub-groups are meeting academic standards</li> </ul>
Use of Technology in Instruction	<ul style="list-style-type: none"> <li>Technology fully integrated into instruction</li> <li>Technology support staff consult with teachers to integrate technology into the classroom</li> </ul>
Leadership	<ul style="list-style-type: none"> <li>Systems approach to leadership</li> <li>Professional culture of teamwork and collaboration</li> </ul>
Teacher Supports/Professional Development	<ul style="list-style-type: none"> <li>Common planning periods for teachers</li> <li>Classroom management and mentoring training such as Boys’ Town and Capturing Kids’ Hearts</li> <li>Access to “Project Lead The Way” and “National Academy Foundation” workshops</li> </ul>
Community Engagement	<ul style="list-style-type: none"> <li>Community evaluates school and district performance through surveys</li> <li>School maintains active community partnerships and shared decision-making</li> <li>Students are involved in community service projects, such as refurbishing used computers for elementary school students</li> <li>Baylor University teaching students complete their practicum training at A.J. Moore</li> <li>The Business Advisory Board facilitates partnerships and learning opportunities, and helps raise community awareness</li> </ul>

## David Douglas High School (Portland, Oregon)

Profile: David Douglas High School (DDHS) is a comprehensive, urban high school of 2,600 students, 34% of whom are minority and 49% of whom are on free/reduced lunch. David Douglas boasts a 94% attendance rate and 84% of students pursue higher education after graduation. Nearly one in three students is an English-language learner, and the school has been growing rapidly, adding more than 100 students per year in the last 8 years. Website: <http://hs.ddouglas.k12.or.us>

Theme	Initiatives
Student Support	<b>Academic Supports</b> <ul style="list-style-type: none"> <li>Teacher committee to improve literacy across grades and disciplines</li> </ul> <b>Social Supports</b> <ul style="list-style-type: none"> <li>All 9<sup>th</sup> and 10<sup>th</sup> grade students have a teacher and an upper-class student as mentors</li> </ul>
Proactive Guidance	<ul style="list-style-type: none"> <li>Progress reports are linked to formal guidance, faculty mentoring and parent conferences</li> <li>Maintains an active School-to-Work Coordinator position</li> <li>Faculty mentor students when developing four-year education plans in the 8<sup>th</sup> grade</li> <li>Students maintain a relationship with a guidance counselor, with four scheduled appointments per year</li> </ul>
Career Exposure, Exploration and Experience	<ul style="list-style-type: none"> <li>Students manage and staff stores, such as the David Douglas Depot, the Kilt restaurant and Scots Auto Repair Shop, to develop hands-on career skills</li> <li>Portland businesses partner with DDHS to meet the expectations of the Oregon Education Act for the 21<sup>st</sup> Century</li> <li>12<sup>th</sup> grade students complete a community internship</li> <li>Business leaders visit the classroom to discuss interview skills and job expectations</li> </ul>
Relevant and Rigorous Education	<ul style="list-style-type: none"> <li>College courses taught by DDHS instructors</li> <li>Graduation requirements include 25 credits and a minimum GPA of 2.0, exceeding state requirements</li> <li>Students must complete school-required Certificate of Initial Mastery (CIM) and a Certificate of Advanced Mastery (CAM) portfolios</li> <li>In the 8<sup>th</sup> grade, students develop and maintain an education plan to focus career aspirations and focus career exploration activities</li> <li>Students choose from one of eight career pathway programs, which incorporate local business input in the curriculum</li> </ul>
Flexibility in the System	<ul style="list-style-type: none"> <li>Dual enrollment options for 11<sup>th</sup> and 12<sup>th</sup> grade students</li> </ul>

## Other highlights

Theme	Initiatives
Data-driven Education	<ul style="list-style-type: none"> <li>Outcomes data are tracked and used to set continuous improvement goals</li> </ul>
Use of Technology in Instruction	<ul style="list-style-type: none"> <li>Technology is required as part of the Certificates of Mastery portfolios</li> </ul>
Leadership	<ul style="list-style-type: none"> <li>School leadership is visible to both staff and students</li> <li>Students, as well as staff, are encouraged to propose new course topics</li> </ul>
Teacher Supports/Professional Development	<ul style="list-style-type: none"> <li>Summer pay supports year-long professional development</li> <li>During the school year, teachers attend in-service seminars and conferences</li> <li>Delayed opening and early release days allow for professional development</li> <li>Block schedule allows teachers to schedule common planning time</li> <li>Teachers work together and mentor each other through the Peer Coaching Program</li> </ul>
Community Engagement	<ul style="list-style-type: none"> <li>Upper-class students participate in community service as part of their career pathway program and Certificate of Advanced Mastery</li> <li>Local businesses are involved in developing career pathway curricula</li> <li>Business Back-to-School week brings industry partners into the school to meet with career pathway instructors and discuss curriculum and employer needs</li> </ul>

### Michael E. DeBakey High School for the Health Professions (Houston, Texas)

Profile: Michael E. DeBakey High School for the Health Professions (DeBakey) is a public magnet high school that represents a partnership between the Houston Independent School District and Baylor College of Medicine. DeBakey's 700 students are accepted by application only. DeBakey students boast the highest standardized test scores in Texas, with 100% of students passing in all areas. The attendance rate at DeBakey is above 98%. Ninety-eight percent of DeBakey students attend college after graduating, and in 2004, DeBakey graduates received \$9.4 million in scholarship offers.

Website: <http://hs.houstonisd.org/debakeyhs>

Theme	Initiatives
Student Support	<b>Academic Supports</b> <ul style="list-style-type: none"><li>• Summer Math Academy for accepted students needing Algebra 1</li></ul>
Proactive Guidance	<ul style="list-style-type: none"><li>• New students attend conferences for course selections and develop four-year education plans</li></ul>
Career Exposure, Exploration and Experience	<ul style="list-style-type: none"><li>• Tour of Baylor College of Medicine and Science Symposium</li><li>• Clinical learning experiences occur at Baylor College of Medicine affiliated teaching hospitals, and other health institutions in the Texas Medical Center</li><li>• 11<sup>th</sup> and 12<sup>th</sup> grade students must complete 100 hours of community service</li></ul>
Relevant and Rigorous Education	<ul style="list-style-type: none"><li>• Curriculum that culminates in college-level courses in Math and Science</li><li>• Health career-oriented curriculum; one required healthcare career course per year</li><li>• Graduation requirements exceed district and state standards</li><li>• All students must take AP Calculus</li></ul>
Flexibility in the System	N/A

### Other highlights

Theme	Initiatives
Use of Technology in Instruction	<ul style="list-style-type: none"><li>• Teledistance or Internet capabilities in all computer labs and most classrooms</li></ul>

## Case study: Pittsburgh Science and Technology Academy (Pittsburgh, Pennsylvania)

Next is a change story, an account of educational transformation that is happening in Pittsburgh, Pennsylvania. This detailed representation of Pittsburgh Public Schools' journey toward "excellence for all" should inform and inspire any educator or administrator at the beginning, interim or continuation of his/her system transformation.

*This piece was completed in collaboration with Sam Franklin, Project Director, Pittsburgh Public Schools. For more information, please visit [www.pghscitech.net](http://www.pghscitech.net).*

The Pittsburgh Science & Technology Academy is a public school targeted toward any student with an interest in science, technology, engineering or math. The school is built on the premise that any student can develop skills for a career in life sciences, environmental sciences, computing or engineering. This is accomplished through a project-based, customized curriculum; tangible support for students and parents; strong faculty; and partnerships with universities and corporations.

The Academy is the product of three years of expert planning and research. Starting with a vision of the Pittsburgh Public Schools' (PPS) Board of Directors and Superintendent Mark Roosevelt, original research and planning was conducted at Carnegie Mellon University's Heinz College, School of Public Policy and Management. The Academy was then designed and implemented by Pittsburgh Public Schools' staff. Research drew from more than 200 books, reports and journal articles, and also includes numerous site visits, benchmarking of dozens of successful schools and primary research that included interviews, community forums and parent focus groups. During the implementation process, seven advisory committees and more than 250 individuals contributed to the creation of: Dream–Discover–Design.

The Academy opens in 2009 with 250 students in grades six through nine. It will eventually serve 550 students in grades six through twelve. The school is located in the Oakland area of Pittsburgh, surrounded by leading universities in science, technology, engineering and math.

*As the executive director of a youth services agency, I found High Schools & Careers: the New Value Proposition Summit both relevant and practical. Dr. Daggett and the other presenters provided practical insight for strengthening an organization's ability to provide rigorous and relevant career and educational programming. It was a rare opportunity to hear, firsthand, from national thought leaders regarding best practices in career education.*

— Karris M. Jackson, MSed  
President & Chief Executive Officer  
Urban Youth Action, Inc.



(l to r) Mark Roosevelt, superintendent, Pittsburgh Public Schools; Dr. Willard Daggett, president, International Center for Leadership in Education; David Malone, chair, Health Careers Futures Board of Directors; Dr. Karen Wolk Feinstein, president, Jewish Healthcare Foundation.



The Academy was established based on a regional pull for an enhanced science, technology, engineering and math (STEM) education in Pittsburgh Public Schools. The five primary reasons for STEM were:

- Students and families wanted new educational options and demonstrated interest in STEM opportunities
- Universities and employers want graduates prepared to meet their expectations
- Region requires graduates who are prepared for expanding STEM opportunities in the workforce
- Female students and students of color want and deserve equal access to STEM opportunities
- Society increasingly requires more scientifically literate citizens

To demonstrate success in meeting the demands of families, post-secondary institutions, employers, the workforce and society, PPS required a school that comprised essential characteristics of a successful secondary school.

Essential characteristics of a successful secondary school

Characteristic	Description
Safe and Welcoming	Physically and emotionally safe place that supports learning
Relationships	Personalized learning environment and connections to teachers, peers and the school
Rigor	High academic expectations for all students; engaging and demanding content and teaching
Relevance	Prepare and connect students to the real world
Student Support	Special help to keep students on track

However, current comprehensive schools were not structured to meet these demands. The first step to addressing this issue was research. Secondary literature review, benchmarking, and best practices and primary research aided the design and development of the Academy. Next, a clear set of principles was established to ensure that relevant research findings became the core of all Academy programming. This included:

- Recognizing the cognitive potential of all students and accepting responsibility for their achievement
- Building the program, lesson and sequences to align with the “rhythms of education.” Dream–Discover–Design
- Seeking to operate in Pasteur’s Quadrant, where science and technology are integrated
- Understanding the value of excellent teaching in success
- Balancing depth and breadth, with an emphasis on depth

Once these principles had been established, strategic decisions were made regarding requirements for success. These included:

- Shifting the grade system from one that is age-based to non-graded, multi-age classes, with pathways that “looped” to ensure all students, at a certain level, have achieved certain standards
- Emphasizing interdisciplinary education and experiences
- Providing appropriate support during “transition” years from 5<sup>th</sup> to 6<sup>th</sup> grade, 8<sup>th</sup> to 9<sup>th</sup> grade, and 12<sup>th</sup> grade to post-secondary training and/or employment
- Building into the system additional instructional time for students who are struggling and for teachers to have “time on task” such as professional development and classroom planning

This led to decisions to implement block scheduling (due to its potential to increase attendance) and to design curricula that respond to regional and national trends, are aligned with education and economic opportunities, are inquiry-driven; and to implement project-based coursework that emphasizes “authentic” instruction that is rigorous and relevant. The school, its partnerships and curricula were now student-centric, customizable and responsive to the needs of higher education and the workforce.

All components in the Academy were value-added. However, measuring the programming and performance of a fluid system was carefully considered as well. The results were defined short, immediate and long-term outcomes, and the processes that lead to those outcomes. The Academy also integrated into its systems, program and performance evaluations. Here, data collection and evaluation is at all levels—district, administrative and classroom—and clear strategy on feasible implementation is mapped. Most important, evaluations will also examine what “adds value” to student learning and achievement, and adjust the curriculum to build on results. Today, these evaluations are relevant not only for the Academy but for future thematic Academies (if implementation proves successful).

The goal of the Academy is to provide opportunities, every day, for each student to dream, discover and design. Every day, students will set goals and generate ideas, research and discover answers, and design real solutions for the real-world problems they will face after graduation. The Academy will do its part to prepare students for their future, whether they go on to higher education or immediate employment.



Keys to success have been the methodical and inclusive planning process throughout. In addition, the project—built on research, planning, and stakeholder engagement—was given adequate time to implement. For example, creating a master schedule that supports each innovative aspect of the program required, on average, four months of planning. For this reason, essential staff was hired early. The team at Carnegie Mellon worked for one year building and strengthening the genesis of the Academy; Sam Franklin (a part of the Carnegie Mellon University project team) was hired as project director after graduation; and the Academy's principal was hired one year early to become knowledgeable of the innovative structure and curricula, provide input on planning and implementation of each component of the school, and lead the hiring of faculty and staff. This structure continues to this day with teachers being hired one year ahead of their class to allow time for professional development and assistance from experts on designing rigorous and relevant courses that meet diverse students' needs.

For these changes to occur, collaboration was also essential. Change is most effective when stakeholders are not or do not feel surprised or forced. For the Academy, advisory committees were a key component in creating change, sharing the responsibility for innovation, providing support and ensuring adequate communication. The process was well documented so that the Board of Directors understood and trusted the research and planning for program components. The success of change is often in the details, and the team's collaboration and communication with community stakeholders (through committees and focus groups) made sure that no detail was overlooked. For example, the idea of a flexible master schedule that adapts to the needs of each student is one that requires very detailed planning and execution. Recommendations received from committees and focus groups with various points of view make the community more confident in the Academy's success.

Another essential component was trust. Because the Academy began as a graduate research project, its findings were lent more credibility. Pittsburgh Public Schools' administration and staff were more open to hearing these new ideas, which helped create an environment that made change possible. Trust also ensured that those leading the change movement could openly and respectfully inform, persuade and include others in the change process. There is a common misconception that large public organizations are not open to it. Yet, during this project, staff were not only open to change but also encouraged it. They recognized what change was needed, but the current system did provide avenues to test, refine and implement those changes. The Academy provided a platform to hear those recommendations, a plan for implementation, and a path for, when successful, spread.

The Pittsburgh Science and Technology Academy will open its doors in 2009, so there are not yet any student performance data. However, preliminary success includes an approval of the admissions process; scheduling and school day structure; and the identification and development of four unique curricular sequences aligned with high-priority occupations (environmental, life, computer sciences and engineering). In addition, there is a planned comprehensive renovation of the Academy's facilities to include 11 STEM laboratories.

# APPLICATION OF TOYOTA PRODUCTION SYSTEM TO EDUCATION

The world of health care and the world of education have many characteristics in common. In both environments, individual or systemic failures have serious repercussions. Major mistakes lead to lives lost – literally, in the case of health care; life-potential in education. To improve quality of care, the healthcare sector has adapted process improvement initiatives such as the Toyota Production System (TPS) and Six Sigma. These tools, including the Pittsburgh Regional Health Initiative's Perfecting Patient Care<sup>SM</sup> program, have resulted in decreased medical errors (hospital-acquired infections) and improved patient outcomes, two key accountability measures in health care.

The institutional learning gained from the success of TPS methods to improve processes for the reduction of errors and improvement of healthcare outcomes has led JHF to examine the potential to apply TPS to process improvement in education. Accountability in education is now at the forefront, with students routinely tested to assess their attainment of state and federal standards. Although educators value accountability goals and performance measures toward those goals, they are not adequately prepared to bring about improvements.

Assessment tests do not measure or reward successful process indicators, such as teaching practices, curriculum, and professional development, that can lead to an improvement in performance (Kirby and Stecher, 2004). Health care has demonstrated that success cannot be determined by processes alone; not all processes lead to desired outcomes. The process of problem-solving that TPS uses is success in itself. It is an approach that builds in and leads to sustainment. Even if the measurement does not show the desired outcome, it is the problem-solving process – its feasibility, reliability and likelihood of replication – that determines success. However, assessment tests have demonstrated that only measuring outcomes (performance) does not assist with the spread of best practices due to the lack of connection between high performance, successful processes and the implementation of those processes that enable schools to become high performing.



Loren H. Roth, MD, associate senior vice chancellor of Health Sciences, University of Pittsburgh Medical Center, and other Summit attendees react to the Closing session's findings.



## Process improvement in education

Current literature and regional happenings have highlighted the applicability of continuous process improvement to strengthen educational processes and lead to better student performance. TPS represents a powerful system for positive change in schools and a robust system for achieving continuous improvement in student capabilities and performance. It has three primary principles: (1) focus on the value stream to solve problems to the root cause; (2) standardize work to ensure that the right processes produce the right results; and (3) empower staff to build a culture of continuous improvement. (Nataraj Kirby and Stecher, RAND Education, 2004)

The value stream graphically depicts a process – mapping materials, information and services required to coordinate activities to deliver a request. It examines the connectedness of the system and the value added at each point in the processes to build quality into those processes. For education, this means that teachers not only need to know what happens in their classroom, but also what happens in the classrooms of previous and current teachers. This should foster an understanding of the integration of the system and how failure in the delivery of instruction affects a classroom, grade, school and student. Teachers will become more aware of problem triggers, and of how and when they pass along problems and the cost of doing so. Most important, teachers will become less likely to pass on problems by addressing them when they occur, solving them to the root cause and instituting appropriate countermeasures.

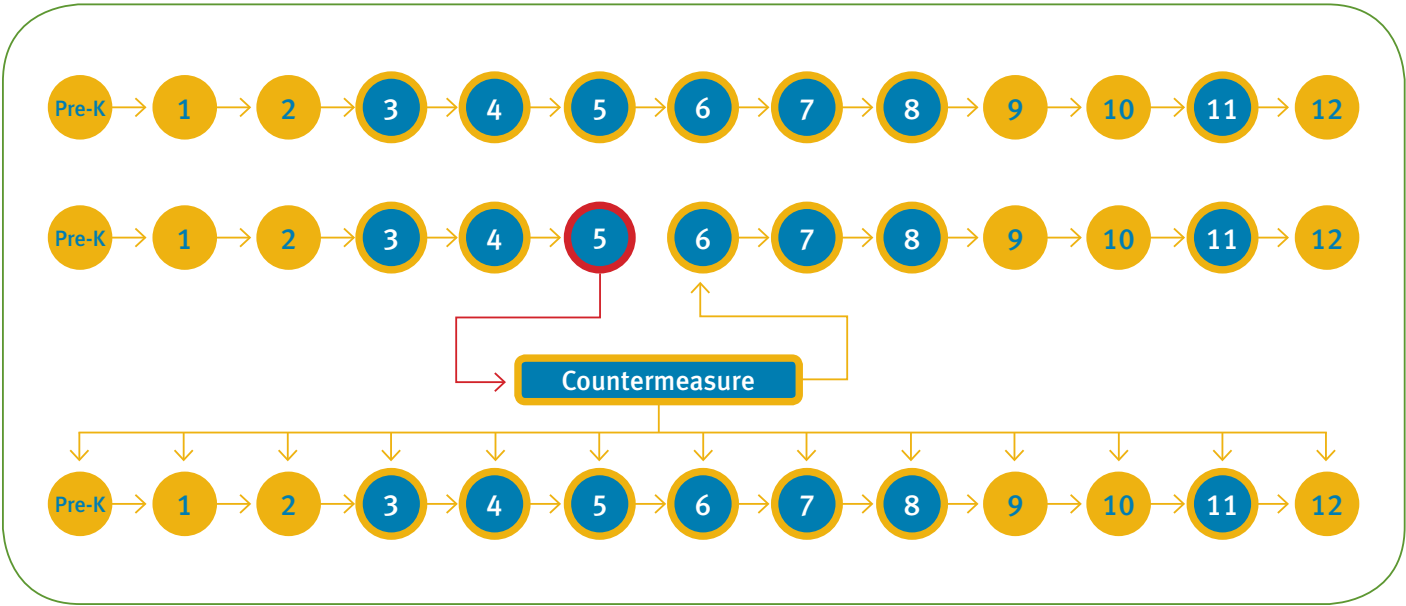
Standardization of work and a reliable help chain limit inconsistency, allowing for easier analysis of results: either the assignment was flawed or the delivery was flawed. But this standardization of work cannot be generated from the top (principal, superintendent or district), for students have different needs and teachers have different teaching styles. Therefore, standardization should be driven by teachers, who, through their direct interaction with students, know what works, what doesn't work and what is applicable across classrooms. Then, teachers can customize a teacher-driven, standardized curriculum to their instructional needs. However, professional development, time and guidance are required to ensure adequate knowledge sharing, standardization, instruction, student learning triggers and countermeasures.

### Analyzing Value Stream

- What are the desired outcomes?
- What intermediate steps add value to that outcome?
- Which of those intermediate steps are what you do?
- What steps (currently in your work) do not add value?
- Which of those intermediate steps are missing from your work?
- When and in what sequence should value-added steps be introduced in your work?
- What resources can be used to support all value-added steps feasibly and reliably?

— Nataraj Kirby and Stecher  
RAND Education, 2004

**Standardized Customized Education:  
Assessment Tool Example**



For every class, the input is students who reached proficiency at previous grade level, the process is implementation of standardized curriculum built by teachers and based on best practices, and the expected outcome is students reaching proficiency or better at grade level and advancing to the next grade. However, if a student does not reach proficiency, the root cause is identified and the process then becomes a standardized countermeasure for root cause, and the outcome is a student reaching proficiency or better at grade level. The root cause and successful countermeasures are then shared throughout the system, and the successful countermeasure becomes part of the standardized curriculum. Curriculum is standardized at each grade level, yet customized, because each student’s sequence of countermeasures will be unique.

Staff (teacher) empowerment is the cornerstone for building a successful continuous improvement environment. Teachers must be provided with the skills and resources they need to complete their work and generate improvements. They must be supported by coaches and, through a combination of teacher knowledge and expertise of coaches, learn to self-assess and bring about change. Generally with assessment, testing accountability is at the top (with administrators). Yet, the knowledge about effective practices for students remains at the frontline in the classroom. Therefore, to ensure efficient problem management and the spread of effective improvements, power to bring about change must return to the classroom.

The level at which educators can institute process improvement methods may vary. Some may consider implementing these programs at a level where the teacher is the worker and student learning (grades) is the product. However, regionally, schools are implementing these methods at the student level, where the student is the worker and their learning (grades) is also the product. Students understand their goals for each activity, receive (standardized) instruction, look at their learning value stream and see what methods add value to their learning and what methods do not, are empowered to use methods they think work best for them, and receive support and guidance to decipher what worked, what did not work and what improvements can be made. (Sostek, Pittsburgh Post-Gazette, February 2008, see page 54). Through these learning “experiments,” students learn from their success and failures (by understanding what is required to bring about different results).

Process improvement cannot be done piecemeal. It must include all relevant players in the process and should be part of everyone’s work, including students. It should not be an “add on;” rather it should be a process integrated with how work is done. Improvement should be coupled with accessible communication processes that will ensure knowledge sharing, guidance and support. Many teachers already integrate some aspect of process improvement into their work. Teachers consistently use measurements of success, such as attendance, pop quizzes, homework and/or tests, that, when so utilized, can inform where improvement should be made. These methods should make it feasible for schools to build on teachers’ expertise through a proven framework for improvement (like TPS) in today’s accountability-driven educational environment.

## Resources

- *Professional development on instruction differentiation, student learning triggers, and instituting countermeasures*
  - *Time for creativity and knowledge sharing*
  - *Guidance and support*
- Nataraj Kirby and Stecher  
RAND Education, 2004

# CONCLUSION

There is a crisis in the U.S., and it should not be ignored. It is a crisis caused by the disconnect between education and application and results in disengaged students, comparatively low levels of academic attainment, lack of skills, and lack of preparation for a significant proportion in the current and future technical workforce.

Achieving the education reforms necessary to bring about “relevant and rigorous” education is seen by many as an impossible goal. However, thoughtful stakeholders throughout the country have identified the shortfalls in the current system and have proposed sensible solutions that can be readily implemented in any school district.

A limited number of key themes have been identified as critically important to re-engaging youth in the joys and importance of education. These themes include: student support, proactive guidance, career exposure, exploration and experience, relevant and rigorous education, and flexibility in the system.

In pockets across the country, there are exemplary schools that have risen to the challenge – pioneering institutions that have restructured their educational delivery and student supports to achieve extraordinary results for students. These schools prove that getting the U.S. back on track with relevant and rigorous education is eminently doable. Success is being achieved in highly diverse and challenging environments, from inner-city neighborhoods to small rural communities. If the problems have been identified, and if potential solutions have been tried and found to work in diverse communities across the country, there can be no excuse for the continued failures of our education system as a whole. Now is the time to implement the best practices from across the nation to improve our schools and our workforce.

Regionally, the Jewish Healthcare Foundation formed an initiative, the Center for Career Learning (CCL), to advance, among employers, schools and community organizations, strategic collaborations that build career awareness and enhance student preparation for careers. Career learning describes a system that integrates best elements of career ambition, awareness and exploration, academic and vocational achievement, and post-secondary education with consistent linkages to the workplace. CCL aims to promote student-centric, value-based collaborations that lead to effective and sustainable programs for student academic and career preparation and success. Its primary strategy is to build capacity for career learning and to support development and integration of a career pathway in the student educational experience.



Center for Career Learning (CCL) programming focuses on research, partnerships and policy reform. A key partnership initiative currently underway is the Pathways to Health Careers Fellowship for after-school program managers and staff, funded by the Jewish Healthcare Foundation and the United Way of Allegheny County. The Fellowship pulls together two significant recommendations from the Summit: (1) resources required for improvement include professional development for instructors on (after school) curricula, time for staff creativity and knowledge sharing, and guidance for staff on implementation and improvements; and (2) funders can take immediate action by working with community-based organizations to encourage students' career awareness and experiences. The Fellowship supports after-school programs to make improvements in their health career development practices and to help at-risk youth becomes "health career" ready. Fellowship participants gain knowledge and application of best practices in career development and document learning, implementation, outputs, outcomes and improvement of their practices. The Fellowship will provide program assessment, evaluation and, most importantly, dissemination of best practices.



Passion

# Inspiration

Attitude

Confidence

# Strengths

Desire



# WORKING GROUP SUMMARIES

## Group 1: Building Blocks

Working to identify experiences (aka building blocks) – such as classroom learning, career exploration, mentorships, internships or part-time jobs – that are crucial to successful development of career identity. The group sought to construct a model career education system that includes the best of these experiences, along with appropriate support and outreach systems.

This group was tasked with identifying the building blocks for an appropriate education and career model. The blocks represent the programs, elements, relationships and instructional tools designed to help students build career identity.

At the outset of the group meeting, participants in the group emphasized that the building blocks, collectively, must be structured to produce and inspire the following positive outcomes:

- Build a **passion** for education through career relevance
- Provide **inspiration** for students
- Generate a positive student **attitude** toward learning and a **desire** to excel
- Give students **confidence** and build upon their innate **strengths**
- Provide links between student strengths and appropriate career opportunities

In pursuit of these outcomes, participants suggested a broad variety of building blocks. Each of these potential building blocks (a total of 44 blocks) were broadly categorized to fall into three macro categories of action:

- Comprising work and career exposure and experiences
- Comprising proactive guidance and student supports
- Encompassing career relevance injected into school curriculum

Once the list of building blocks was outlined, the group broke into smaller sub-groups to prioritize the building blocks and identify the blocks deemed to be most important. The outcome of the discussion was the following general prioritization:

1. Parental and community engagement and support
2. Expectation of high school completion
3. Self-esteem and self-respect
4. Apprenticeships and active work-oriented learning experiences
5. Coaches, mentors and role models
6. Developing a work ethic
7. Gaining financial literacy and experience in what it takes to start an enterprise
8. Developing a global perspective on work and careers
9. Developing the confidence to take intellectual risks

Each group was asked to summarize their deliberations for all of the Summit participants in a closing plenary session. Each group was tasked with dividing their top-line findings into three categories:

- What to do new
- What to do differently
- What not to do

In the closing plenary session, the building blocks group summarized their recommendations as follows:

Recommendations

What to do new	<ul style="list-style-type: none"><li>• Provide the funding for each school to hire a community partnership coordinator who will facilitate relationships among the school staff and members of the community to develop the complementary learning plan for the building</li></ul>
What to do differently	<ul style="list-style-type: none"><li>• Change the 180-day school calendar and the school day schedule and integrate career exploration and paid apprenticeships</li><li>• Rewrite state academic standards to have real-world application, changing assessment, professional development, curriculum and materials</li></ul>
What not to do	<ul style="list-style-type: none"><li>• Assess competence with “Quadrant A” questions</li><li>• Fail to engage higher education, including community colleges, in matters of teacher preparation, professional and curricular development, etc.</li></ul>



The Building Blocks working group develops its report for the Closing session.



## Group 2: Pathways

Seeking to highlight the various pathways and decision-making points shaping student education and the introduction and pursuit of career relevance.

Early discussion by this group established the following parameters:

- The group decided that they would be discussing pathways with a small “p” as opposed to specific existing and formalized pathway initiatives such as those established under the Pennsylvania State Career Clusters Initiative
- Pathways building skills for careers should be extended beyond K–12 and should also be available to the working poor and other adults
- Pathways need to fit the economic and social contextual realities of school districts and their home locations
- Pathways should not imply narrow and closed routes to a goal; rather multiple pathways link to each other creating a web, or street map, of options for reaching goals
- Pathways must align and engage key people and institutions

In pursuit of these outcomes, participants suggested a broad variety of pathway elements. Broadly categorized, these 37 elements fall into six macro categories:

1. Expose teachers to workplaces and encourage relevant curriculum applications
2. Expose students to career options and workplace expectations
3. Provide student work experience
4. Engage community youth development organizations in career learning and preparation
5. Engage family in career considerations, identity and aspirations
6. Support employer participation in teacher, student and family engagement

Some of the key themes contained in the group discussions centered on the following:

- Start early—introduce the world of work and its relevance to school work in elementary school
- Explore options—illustrate the many different options and opportunities that the student will have to learn, and connect their learning to various career options
- Guide—guide students along learning pathways, with specific learning plans linked to careers
- Make relevant—connect what is learned and the potential application of that knowledge in the real world



In the closing plenary, the pathways group summarized the following recommendations:

### Recommendations

What to do new	<p>Multiple choices in a flat framework – no “one size fits all”</p> <p>Pre-K–14 (funding for first 2 years of training after high school)</p> <p>State policy infrastructure support and technical assistance to promote better student transition rates</p> <p>Focus on building modern competencies in “D” (project based, problem solving with employers (apprenticeship), tangible products); incentives (\$\$\$) – can be aided with substantially larger employer engagement</p> <p>Demonstration sites in metropolitan locations to provide research evidence of how systems can be changed to promote pathways</p> <p>Expand student social (professional) networks</p> <p>Mix of comprehensive career counseling, contextual learning, teaching with application for all, including academic and career-focused courses</p>
What to do differently	<p>Ensure that teachers are knowledgeable and passionate about application-based learning (continual educator training)</p> <p>Make the business case (ROI) for community (employers, guardians) in learning process</p>
What not to do	<p>Bifurcated model</p> <p>“Silver Bullet”</p> <p>Let research/best practices languish</p>

### Group 3: Milestones

Tasked with identifying measurable milestones that students should achieve or experience along the path to career identity and preparation. Participants were asked to consider where the career exploration and relevance journey starts; the intellectual, social and emotional milestones to be reached; the value of certain milestones; and potential ways to measure progress.

Group discussion went immediately into various milestones and supports necessary to achieve those milestones. It was also noted that some milestones need to represent not just a measure of progress or support, but may need to be “toll gates” where a certain level of performance has to be achieved before a student is allowed to progress to the next level. In an ideal system, milestones and toll gates would not be expected to be passed at the same time by all students—rather, progress should be at a pace that challenges the students but does not overtax them. In such a system, grade levels may be obsolete barriers, carrying with them the stigma of being held back to repeat a grade. Instead, a more fluid system would avoid grade levels and allow students to progress through a more varied set of milestones and tolls instead.

- Required academic and skills mastery
- Personal growth and self-confidence
- Career fundamentals exposure and exploration
- Career planning, experience, and application

The working group decided on the term “The Three E’s,” for exposure, exploration and experience. It was noted that these fit within a broader platform for achieving improved education and career readiness comprising the following three attributes:

1. Supports—having the social supports that promote attendance at school, the desire for personal advancement and a school environment that embraces change
2. The Three E’s—career exposure, career exploration and career experience
3. Quality education—using a curriculum designed to bring rigor and relevance to a student’s education

For this structure to be developed, it was noted that there needs to be a strong public discourse involving educators, employers, community members and policymakers.

A key question raised is whether education should be geared to gradually narrow students into being knowledge specialists—focused in a particular field of study. Or, should the goal be much less focused and more geared to giving students the maximum amount of tools in their toolbox so that when an opportunity comes his or her way, a student can adapt to the opportunity and unpredictable situations. There was no resolution of this issue.

There was a recommendation to support policy change (especially in regard to the restrictive *No Child Left Behind* policies) that would support schools having the freedom to redesign their curriculum to meet the needs of their community and their students. It was further noted, however, that the entire community, not just politicians, needs to be supportive of change. There needs to be broad community support (from parents, employers, community leaders, etc.) for active career exploration, lengthening the school calendar, etc. Community support and engagement is seen as critical for effective school reforms to take place and take root.

### Participants’ Quotes

*“Do more serious research and demonstrations. We have had a lot of situations where we have tried to mandate something for everybody without demonstrating that it works for anybody.”*

*“We have a program in North Carolina called Futures for Kids. It’s an electronic online mentoring program. Middle schoolers and high schoolers take an aptitude test. Then a career choice is matched to aptitude, and there are industries that have signed up to be career coaches. When the kids want to explore a career, they send an e-mail on a discussion board and we answer questions about what courses to take and what happens in a particular kind of career. It’s a direct connect using technology to interact with these kids from 6<sup>th</sup> through 12<sup>th</sup> grade, and it doesn’t require anybody being on campus.”*

In the closing plenary session, the milestones group summarized their recommendations as the following:

### Recommendations: Career Awareness, Preparation and Skills Mastery

Elementary	Middle	High School
<p>Acquisition of basic skills and competencies:</p> <ul style="list-style-type: none"> <li>• Academic</li> <li>• Interpersonal</li> <li>• Communication</li> <li>• Problem-solving</li> </ul>	<p>Acquisition of more advanced skills and competencies:</p> <ul style="list-style-type: none"> <li>• Academic</li> <li>• Interpersonal</li> <li>• Communication</li> <li>• Problem-solving</li> </ul>	<p>Acquisition of advanced skills and competencies:</p> <ul style="list-style-type: none"> <li>• Academic</li> <li>• Interpersonal</li> <li>• Communication</li> <li>• Problem-solving</li> </ul>
	Curriculum that connects skills acquisition with “real world” applications	Curriculum that connects skills acquisition with “real world” applications
<p>Awareness of world of work:</p> <ul style="list-style-type: none"> <li>• Employer sectors—clusters</li> <li>• Workplace expectations</li> <li>• Technical, professional, sales and service options</li> </ul>	Extracurricular activities and community experiences relating to local job market	Personal electives and extracurricular activities related to career goals
Identification of link between academic disciplines and job requirements	<p>Exposure to career training options:</p> <ul style="list-style-type: none"> <li>• Two- and four-year colleges</li> <li>• Career and technical education</li> <li>• Career counseling and mentoring</li> <li>• Youth development agencies</li> <li>• Industry and workforce training center</li> <li>• Military</li> <li>• Apprenticeships</li> <li>• Web-based training</li> <li>• Visits to or from</li> </ul>	<p>Participation in career preparation activities:</p> <ul style="list-style-type: none"> <li>• Career days</li> <li>• Community service</li> <li>• Cooperative education</li> <li>• Senior project</li> <li>• Internship</li> <li>• Job shadowing and career mentoring</li> <li>• Part-time employment</li> <li>• Apprenticeships</li> </ul>
Mapping of personal preferences and aptitudes	<p>Creation of a personal career:</p> <ul style="list-style-type: none"> <li>• Portfolio and plan</li> <li>• Career goals</li> <li>• Career preferences</li> <li>• Training and education requirements</li> <li>• High school electives</li> <li>• Internships, visits</li> </ul>	<p>Formal and directed career plan with pathways and milestones</p> <ul style="list-style-type: none"> <li>• Career portfolio</li> <li>• Achievements</li> <li>• Awards</li> <li>• Community service</li> <li>• Interests, hobbies, skills</li> <li>• School subjects</li> </ul>
Understanding career choices, preparation skill requirements and job satisfaction of teachers, family members and adults in their communities		Experience (virtual or actual) in entrepreneurship knowledge of basic skills
<p>Understanding components of job choice:</p> <ul style="list-style-type: none"> <li>• Geographic location</li> <li>• Job descriptions</li> <li>• Salaries/benefits</li> <li>• Work schedules</li> <li>• Work conditions</li> </ul>	<p>Analysis of economic factors that affect employment options:</p> <ul style="list-style-type: none"> <li>• Competition (domestic and foreign)</li> <li>• Natural resources, population, and demographics</li> <li>• Unemployment rates</li> <li>• Labor supply</li> </ul>	Post-secondary education or training selections

## Recommendations: Career Exploration, Experience and Acquisition

Elementary	Middle	High School
Practice in speaking, listening, writing for sales and marketing	Understand and identify work skills: <ul style="list-style-type: none"> <li>• Commitment</li> <li>• Communication</li> <li>• Dependability</li> <li>• Health/safety</li> <li>• Initiative</li> <li>• Time management</li> <li>• Team work</li> <li>• Technical literacy</li> </ul>	Capacity to do a business plan: <ul style="list-style-type: none"> <li>• Competitive analysis</li> <li>• Budgets</li> <li>• Workplans and timelines</li> <li>• Market strategy</li> <li>• Resource inventors: <ul style="list-style-type: none"> <li>• human, capital, technological, natural</li> </ul> </li> <li>• Sales forecasting</li> </ul>
Experience in accessing information sources	Self-assessment inventory (using available tools such as <i>Keys2Work</i> )	Advanced self-assessment linked to job requirements of selected careers
Letter writing basics	Participation in community youth agencies that develop “soft skills”	
Identification of characteristics of a healthy, satisfying, invigorating workplace	Construction of budgets and analysis of financial sheets	Identification of appropriate rights (labor laws, disability rights, OSHA, safety requirements, FLSA, etc.)
	Experiments in managing time and finances	Knowledge of advanced problem-solving, interpersonal, advocacy skills adapted to workplace: <ul style="list-style-type: none"> <li>• Role playing</li> <li>• Simulations</li> <li>• Constructive criticism</li> <li>• Mediation</li> <li>• Negotiation</li> </ul>
Practice in interpersonal relations related to teamwork, leadership, advocacy, problem-solving resiliency	Mapping the landscape of business support organizations <ul style="list-style-type: none"> <li>• Chambers of Commerce</li> <li>• Professional associations</li> <li>• Career centers</li> <li>• Junior Achievement</li> <li>• Small business associations</li> <li>• Venture capital</li> </ul>	Financial literacy: <ul style="list-style-type: none"> <li>• Gross pay</li> <li>• Expenses</li> <li>• Net pay</li> <li>• Benefits</li> <li>• Taxes</li> <li>• Savings</li> </ul>
Entrepreneurial project requiring leadership, team building, risk taking – virtual or real – which generates money, improves the human condition or tackles a current problem	Analysis of economic factors that affect employment options: <ul style="list-style-type: none"> <li>• Competition (domestic and foreign)</li> <li>• Natural resources, population, and demographics</li> <li>• Unemployment rates</li> <li>• Labor supply</li> </ul>	Definition of career vs. job
		Link to community career counseling resources
		Completed applications to advanced training and education

*Milestones are consistent with the Pennsylvania Department of Education's Academic Standards for Career Education and Work.*



## Group 4: Anatomy of a Dream School

The goal of the dream school working group was to discuss existing career-focused schools in the U.S. and the key elements contributing to their success. The group was asked to mix and match successful components of the most accomplished programs to create a new “dream” model.

Considering what makes and what leads to a dream school, it was noted that communities that have successful institutions do not achieve success randomly. Rather their successes result from good process—from sitting down together, problem-solving and developing shared solutions.

The group focused first on discussing the characteristics of schools that are being successful and are on the leading edge of rigor and relevance. The following characteristics were noted:

Engaged students	Students who are actively engaged in the learning process. In effect, they are workers rather than passive learners.
Skilled staff	Highly-skilled teaching staff who are themselves active learners.
Staff as learning facilitators	Staff focus on facilitating the learning process, rather than being simply talking heads at the front of a classroom.
Alternatively-certified teachers	Many members of the faculty are alternatively certified or adjunct faculty bringing fresh perspectives, tools and techniques.
Focused mission	The school has a clearly expressed and tightly coupled mission.
Pathways communicated	Students understand the “trajectory of learning,” and they see the pathways available to them moving forward.
Student centered	The school is focused on the needs of individual students, rather than students as holistic blocks all to be pushed through on the same timeline.
Career focused	Opportunities for career-oriented learning linked to actual career opportunities in the community, thereby facilitating shadowing, internships and other real-world experiences.
Rigorous counseling	Both career and college placement services offered with equal attention to detail. Counseling functions begun in middle school to help outline paths and plans for students.
Social supports	Supports to make a life of learning easier for students with challenges—such as students with children (daycare), provision of transportation, etc.

Several schools in the U.S. were mentioned as exemplifying most of these characteristics. These schools included:

- South Texas High School for the Health Professions
- Center for Research and Technology in Fresno, California
- Kansas City (Kansas) schools

*“No Child Left Behind has created policy coherence around state accountability mandates and standardized testing, and schools have responded in time. They are beating the test drum, beating consistently, constantly, at the expense of any kind of engagement with career, with creating rigorous, relevant environments.”*



The discussion of schools provoked the identification of further characteristics that are needed, or may be preferential to have, in an ideal school environment. These included:

<b>Adequate resources</b>	The minimum financial resources necessary to have the tools and resources required to do the job right.
<b>Strong leadership</b>	A strong principal and leadership team linked to a supportive and engaged school board that is behind the school's mission.
<b>High expectations</b>	Students are expected to do well and are given the resources and attention to help them achieve their potential.
<b>Flexibility</b>	An ability to be flexible in scheduling, class make-up and other areas to accommodate the needs and preferences of students.
<b>Testing out</b>	Ability to test-out of classes to help students avoid boredom in unchallenging classes.
<b>Alternative timetables</b>	Alternative school day timing or alternative school calendar – most likely increasing the amount of time students spend at school or in learning activities.
<b>Technology</b>	Access to high-quality technology resources in the classroom and labs.

In the closing plenary session, the dream school group summarized their recommendations as the following:

## Recommendations

<b>What to do new</b>	<p>Establish a professional development system to support a continuous learning process for all staff and stakeholders</p> <p>Rethink all aspects of time (time of day, length of school year, instructional and practice schedules)</p> <p>Ensure that there is a flexible technology structure that is accessible to all and that will help build relationships among stakeholders</p> <p>Systems that support Pre-K–12 objectives need to be aligned and fully funded</p>
<b>What to do differently</b>	<p>Ensure that educational planning is collaborative, active, open, deliberate and owned by the region</p> <p>Make students the central focus of our schools and develop individualized whole student-learner plans starting in Pre-K–12</p> <p>Encourage the development of curricula and assessments in the “D” quadrant</p>
<b>What not to do</b>	Think conventionally, pessimistically and negatively about the possibilities and opportunities

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## Schools Focused on Major Themes

KIPP SHINE Prep (Houston, Texas) website: <http://www.kipp-houston.org>

Dana Middle School (Hawthorne, California) website: <http://www.danamiddle.org>

A.J. Moore Academy (Waco, Texas) website: <http://www.wacoisd.org/ajmoore>

David Douglas High School (Portland, Oregon) website: <http://hs.ddouglas.k12.or.us>

Michael E. DeBakey High School for the Health Professions (Houston, Texas)  
website: <http://hs.houstonisd.org/debakeyhs>

Pittsburgh Science and Technology Academy (Pittsburgh, Pennsylvania)  
website: <http://www.pghscitech.net>

## Referenced organizations, programs and/or websites:

Boys' Town website: <http://www.boystown.org>

Boys' Town Educational Model web page: <http://cecp.air.org/resources/success/boystown.asp>

Capturing Kids' Hearts web page: <http://www.flippengroup.com/education/ckh.html>

National Academy Foundation website: <http://www.naf.org/>

National Association of Manufacturers website: <http://www.nam.org/>

National Center for Education Statistics website: <http://nces.ed.gov/>

Pittsburgh Public Schools website: <http://www.pghboe.net>

Pittsburgh Regional Compact™ website: <http://www.pittsburghregionalcompact.org>

Project Lead the Way website: <http://www.pltw.org/index.cfm>

Successful Practices Network, International Center for Leadership in Education  
website: <http://www.successfulpractices.org>

IF IT WORKS FOR TOYOTA ...

# ‘Continuous Improvement’

Management Philosophy Is Put To Work In First Grade

by Anya Sostek

ARTICLE AS IT APPEARED IN:

PITTSBURGH POST-GAZETTE

Sunday, February 17, 2008

The sparkly smiley-face stickers and pink crayons in first-grade teacher Carly Laurent’s classroom at Mt. Lebanon’s Washington Elementary School don’t look as if they came from the world of Total Quality Management.

They are being used that way, however, as part of the same “continuous improvement” management model that made Toyota the world’s top-selling automobile company and dramatically decreased injury rates at Alcoa.

Only at Washington Elementary, the “workers” are the pint-sized pupils and the end products are better spelling, reading and math scores. And the day-to-day management techniques might sound a little different than those used in the corporate world.

“All right, sweet pea, let’s look at your spelling test,” Ms. Laurent says to 6-year-old Tiausa Brown, who gets a high-five and an “awesome” for her perfect score of 10 out of 10.

Tiausa then places a smiley sticker to mark her score on a class graph of the test performance, and, after conferring with a classmate, uses a pink crayon to fill in a bar graph in her personal data binder.

After all of her pupils receive their scores and chart their progress in their binders, Ms. Laurent calls the class together to compare this week’s spelling performance (all 8s, 9s and 10s) to the previous week’s (some 5s and 6s) and to discuss what worked well (spelling in their heads, practicing in the car) and what could be done differently to improve next time (checking their work, decorating the bathroom with words on Post-it notes).

“They’re more in tune with all of their learning,” said Ms. Laurent. “They can read what the goals are and they’re more focused when they’re doing an activity.”

In the business world, continuous improvement was popularized in post-World War II Japan and is known in various forms as Total Quality Management, lean manufacturing, Kaizen, the Baldrige model and Six Sigma.

“Continuous improvement, in its simplest terms, is about being better tomorrow than you are today, being better next month than you are this month, being better next year than you are this year,” said Jay Marino, chair of the K-12 education committee for the American Society for Quality, which promotes use of continuous improvement technique.

## Adopting what works

The basic idea is that organizations and individuals should set goals, follow a plan to reach those goals, examine the results and come up with strategies for what they will do better the next time. Or, as it’s written on the wall of Ms. Laurent’s classroom, “Plan,” “Do,” “Study,” “Act.”

The philosophy spread to education in the 1990s, said Mr. Marino, and in 1998, educational institutions became eligible for the Malcolm Baldrige National Quality Award, which recognizes businesses for excellence in performance improvement.

“What we try to do in an educational setting is apply the theory from the boardroom, the central office, down to the individual student, where even kindergartners are saying, ‘Can I be better tomorrow than I am today?’” said Mr. Marino, who is also an associate superintendant in Cedar Rapids, Iowa.





After the continuous improvement plan was implemented in Cedar Rapids in 2004, according to Mr. Marino, fifth-graders increased their math proficiency by 6.9 percent by the time they reached eighth grade. Reading groups increased 9.6 percent over the same period.

In Mt. Lebanon, the school district has adopted corporate mainstays such as mission statements and balanced scorecards. As of now, it's the teachers' choice whether to use continuous improvement techniques in the classroom.

First-grade teacher Jacqueline Zapko is one of the district's strongest proponents of the continuous improvement process. In her first job out of college, she worked in a school district in Ashtabula, Ohio, that had not made adequate yearly progress under the No Child Left Behind Act and had decided to adopt the Baldrige model.

Ms. Zapko was sent for intensive training even before she met her first class and became convinced of the power of continuous improvement. Even though the Mt. Lebanon district couldn't be more different economically than Ashtabula, the techniques work equally well, she said.

"You're having an open dialogue with the kids about their learning," she said. "You're asking, 'What's going to work for you, so you can learn?'"

When 6-year-old Joshua Dougherty sat down with Ms. Zapko for his individual conference on his spelling test, he immediately looked at the class bar graph for the day and said, concerned, "There's only one 10 out of 10 so far."

Joshua then found out that for his perfect score, he could add a second sticker to the graph, and Ms. Zapko reviewed his strategy with him.

"You said practicing in your head was something you were going to do this time. Did you do it?"

"Yes," said Joshua.

"Did it help?"

"Yes."

She then asked him to write that strategy on the "Plus/Delta" chart in his data binder, which tracks what is working well for each goal and what could be changed.

While most of the pupils responded well to marking their scores on the class graph and coloring in their individual data binders, one child did start to cry after discovering that she was the only one not to score a perfect six out of six on her "sight words" reading test.

To Ms. Zapko, the extent to which pupils care about their performance is a sign of the power of continuous improvement as a motivating tool.

"To me, I would rather have that because they're invested in it," she said. "Guaranteed, she'll have all of them right next week."

Applying business techniques to the classroom is nothing new, said Larry Cuban, a professor emeritus of education at Stanford University, but too often their main function is not to transform education, but to sound impressive to parents and community members.

"Programs like the Baldrige are cosmetic," he said. "It's like Botox to wrinkles. It may work, but it's really the teacher and the kids that's most important."

For Kelly Barsotti, however, who has taught in Mt. Lebanon for nine years and used the continuous improvement techniques in her second grade class for two years, there's a definite benefit.

"It makes them more aware of their part in the process," she said, after conducting an exercise in which her pupils expertly analyzed a scatterplot of their reading test scores.

"For the kids, they are really critically thinking about themselves as learners. If we can get them to do this now, just imagine what they'll be able to do in the future."

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Now's the Time to Connect to

# Build Your Future Workforce

THE PITTSBURGH  
REGIONAL COMPACT

## Educator in the Workplace: “An Incredible Opportunity for Business Leaders...”

The educator-in-the-workplace program is an incredible opportunity for business leaders to work with school districts, according to Daniel Paul, a certified workforce development professional at the Allegheny Intermediate Unit. And now, says Paul, is the right time for businesses looking to connect with educators in this meaningful way to establish contact with an organization such as the Allegheny Intermediate Unit (AIU).

At the AIU, this program is more than just a series of business visits or job shadows by educators. Rather, it's an opportunity for professionals to meet professionals with a common goal: to support and enhance the career growth and development of our youth—the workforce of tomorrow for the Pittsburgh region.

Recently the *Post-Gazette* headlined, “... Teachers Travel to Work Sites to Learn What to Teach.” The article about the AIU program provided several local and real-world examples of how educators and employers are coming together to mutual benefit. For business leaders, these partnerships can help with the recruitment of new employees and provide opportunities to tell teachers what skills prospective employees might be lacking.

## Educators: bringing workplace experiences back to the classroom

The educator-in-the-workplace program at the AIU prepares educators and business hosts for a positive and constructive exchange of ideas.

Prior to any placements at business sites, educators participate in an educator-in-the-workplace workshop to discuss employment issues with a panel of business leaders. Engagement with business sites follows with educators using an educator-in-the-workplace logbook to record their observations in a common language appropriate for career education. Next, educators prepare classroom lessons about the business culture, expectations and skill training components that they have witnessed in the workplace. These lessons are aligned with the Pennsylvania Career Education and Work Standards as well as the Three Rivers Workforce Investment Board's Work Ready Competencies.

## Businesses + schools: engaging to fill the employee pipeline

Business hosts receive a guidebook that helps them develop an agenda and understand the purpose of this program. All of this preparation results in some extraordinary examples of career education being integrated into the classroom. A secondary outcome is the development of a working relationship between the educator and a newfound business partner. Employee partners are often willing to visit a classroom to tell students the story of their career path and answer questions about the day to day work they do and make connections to the work that the student is doing in the classroom. Subsequently, job shadows, internships and part time employment can be the result of the special relationship between an employer and the class of the teacher participating in educator in the workplace.



“This is a ‘win-win-win’ program,” said Paul.  
“Businesses win by their opportunity to engage in practical ways with education. Educators win by having a structured experience at an actual job site. And students win with the delivery of current, relevant and useful career information.”

### Making the connection

Paul notes that although the AIU runs its program every summer, beginning in June, it is possible for businesses and educators to partner at other times of the year, but it’s more difficult. “More important than when the program is done is determining that a business’s mission is aligned with the educator-in-the-workplace program’s intention. Unlike a student visit to a business or job shadowing for a student, this program requires professionals to develop ways to bring information, insight and inspiration to the classroom.

“It’s not difficult,” said Paul. I work with the participating business, to varying degrees, to help them have the best experience and to get across their most important messages to educators and students.

**Editor’s note:** For those seeking additional information on the Allegheny Intermediate Unit’s educator-in-the-workplace program, Dan Paul is available at 412-394-5702 or via e-mail at [daniel.paul@aiu3.net](mailto:daniel.paul@aiu3.net).

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And Welcome To

# The Real World

Program has teachers travel to work sites to learn what to teach

by Anya Sostek

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Dressed in a hard hat and florescent safety vest, Norma McGinnis stood next to an unfinished highway bridge on the North Side last week, pointing to a truck snaking its way backwards over the narrow ramp.

“So this would be a CDL license?” she asked, jotting down notes about the driver’s qualifications.

Ms. McGinnis normally spends her days as a health and physical education teacher at Northgate High School. But for three days last week, she was on a job-hunting mission -- not for herself, mind you, but for her high school students interested in a career in construction.

In the past couple months, 13 such teachers have fanned out across the region, participating in the “Educator in the Workplace” program run by the Career Dynamics office of the Allegheny Intermediate Unit.

The idea behind the program is to improve the career prospects of high school students by facilitating connections between teachers and employers. As a side benefit, the program helps businesses recruit new employees and gives them a chance to tell teachers what skills prospective employees might be missing.

After their days of job shadowing, the teachers are required to complete two lesson plans about the experiences.

“Our real goal here is that students get current, up-to-date information, and that they learn about it in an exciting way,” said Daniel Paul, program coordinator for Career Dynamics at the AIU. “It answers the question, whether it’s math or science or English, ‘Why do I have to learn this?’ “

Nicole Kenline, an English teacher at Baldwin High School, spent three days at the Equitable Resources gas company learning about career opportunities and absorbing pleas that students be taught better communication skills.

“Every person every day I was there voiced the same complaint: that people aren’t taught proper e-mail etiquette,” she said, noting that the company was concerned about improper grammar in e-mails, as well as the use of text messaging abbreviations. “We have to spend a little more time on those things that we take for granted.”

On the construction site at the intersection of Interstate 279 and Route 28, Ms. McGinnis peppered project superintendent Gary Chesnoski and recruiting specialist Ron Kubitz of Brayman Construction Corp. with questions about whom they hire and what a career trajectory for an entry-level worker might look like.

Not all of her students want to go to college directly after high school, Ms. McGinnis said, and construction offers more of a career path than many other industries.

For those without a post-high school degree, the highest-paying available jobs go to union members, said Mr. Kubitz. Because getting into some unions can be difficult without connections, he suggested that students could work as laborers in Brayman’s shop and yard, making somewhere around \$12 an hour, and that Brayman could sponsor them for a union if the company was pleased with their work.

“There’s a lot of good-paying jobs here, but they have to know how to find them,” said Ms. McGinnis.



She also was pleased to see that there were women working construction the site and to hear that there are summer job opportunities for high school students.

Mr. Chesnoski told Ms. McGinnis that it's important for high school students to have basic math skills, a strong work ethic and good communication skills, but that most everything else can be taught on the job.

At Oxford Development, which hosted a teacher for three days in June, vice president Scott Pollock also tried to stress communication skills. The company finds that the college graduates that it hires have a solid engineering background but aren't always able to clearly communicate their knowledge.

Fred Gurney, president of McKeesport-based Maglev Inc., wanted teachers to inform their students about metalworking jobs that are available with an associate's degree, or a welding certificate, in precision fabrication technology. Such workers are in demand, he said, and might earn a starting salary in the high \$30,000 or low \$40,000 range.

"There are excellent jobs, high-paying jobs available, and we're never going to get them filled if we don't have students coming in," he said.

Back at the construction site, Ms. McGinnis was focused on getting her students into a proper career pipeline. High school shouldn't just be about academic skills, but also about life skills and career connections, she said.

"We've got to get them into real world positions—we've got to build it from the ground up," she said, looking around at the piles of wooden pallettes, pristine concrete and heavy construction equipment. "No pun intended."

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